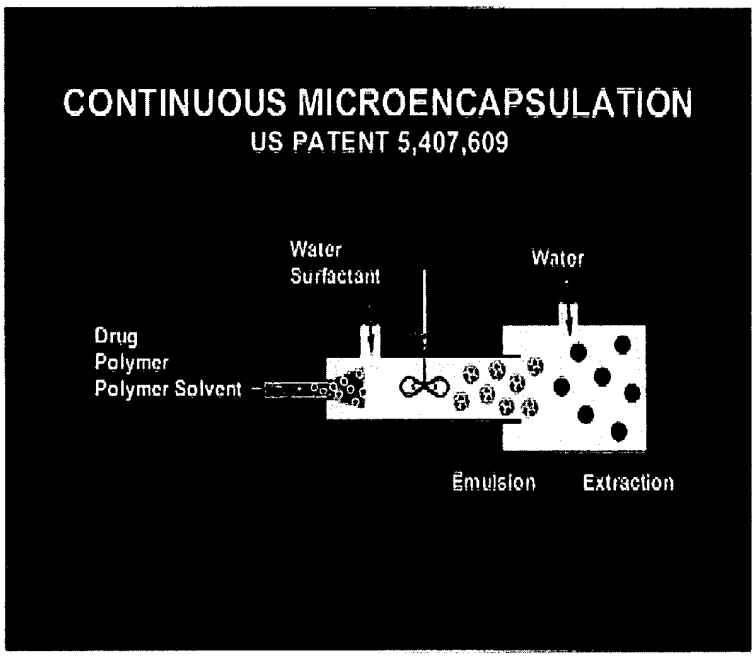
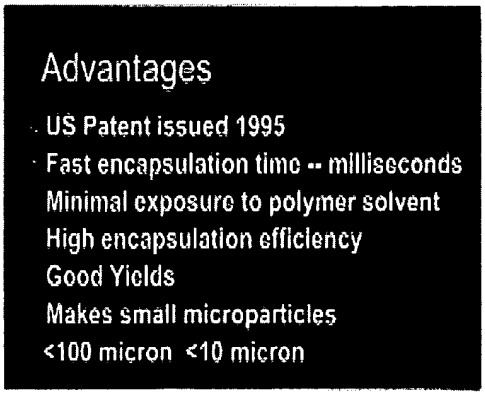




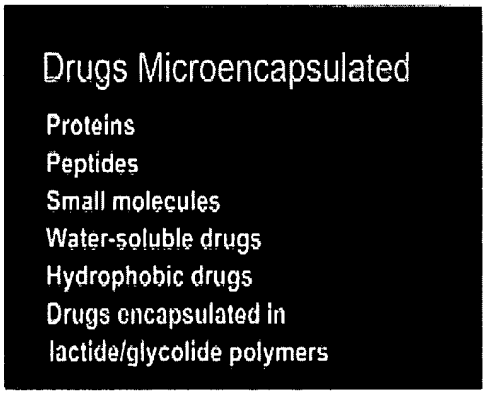


Figure 1

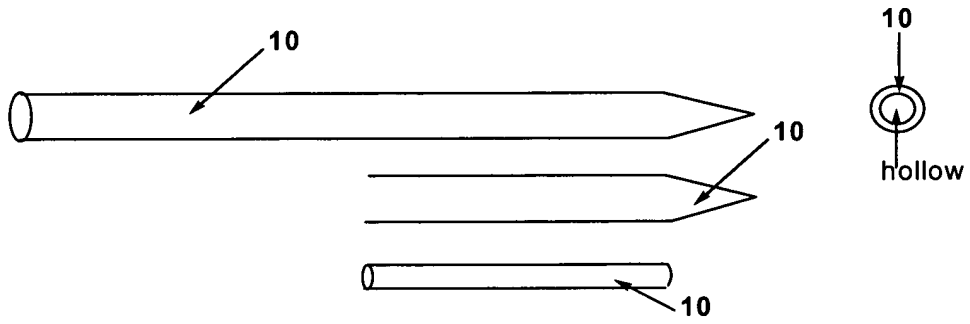


Figure 2

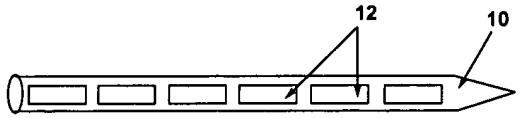


Figure 3

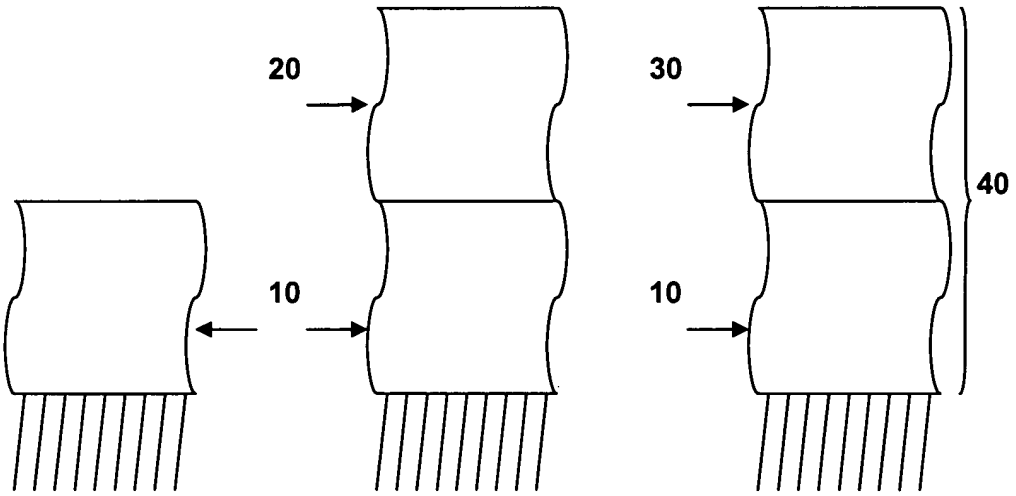


Figure 4

Conditions: Ambient

Material:	PX510	PX261	PX749	PX125	PX510 + 14% Paclitaxel
Hardness:	F	B	3B	4B	F

Conditions: 5 minutes in 37°C pH 7.4 Saline Buffer

Material:	PX510	PX261	PX749	PX125	PX510 + 14% Paclitaxel
Hardness:	F	B	9B	<9B	F

Hardness Rating: 2H-H-F-HB-B-2B-3B-4B-5B-6B-7B-8B-9B

Harder ⟷ Softer

Figure 5

Conditions: Ambient

Material:	PX510	PX261	PX749	PX125	PX510 + 14% Paclitaxel
Resistance To Cracking	< 3 mm	< 3 mm	< 3mm	< 3mm	<3mm

Conditions: 5 minutes in 37°C pH 7.4 Saline Buffer

Material:	PX510	PX261	PX749	PX125	PX510 + 14% Paclitaxel
Resistance To Cracking	< 3 mm	< 3 mm	< 3mm	< 3mm	< 3mm

Figure 6

Conditions: Ambient

Material:	PX510	PX261	PX749	PX125	PX510 + 14% Paclitaxel
Class:	5B	5B	5B	4B	5B

Class Rating: 5B = 0% of coating removed from substrate
4B = Less than 5% of coating removed from substrate

Figure 7

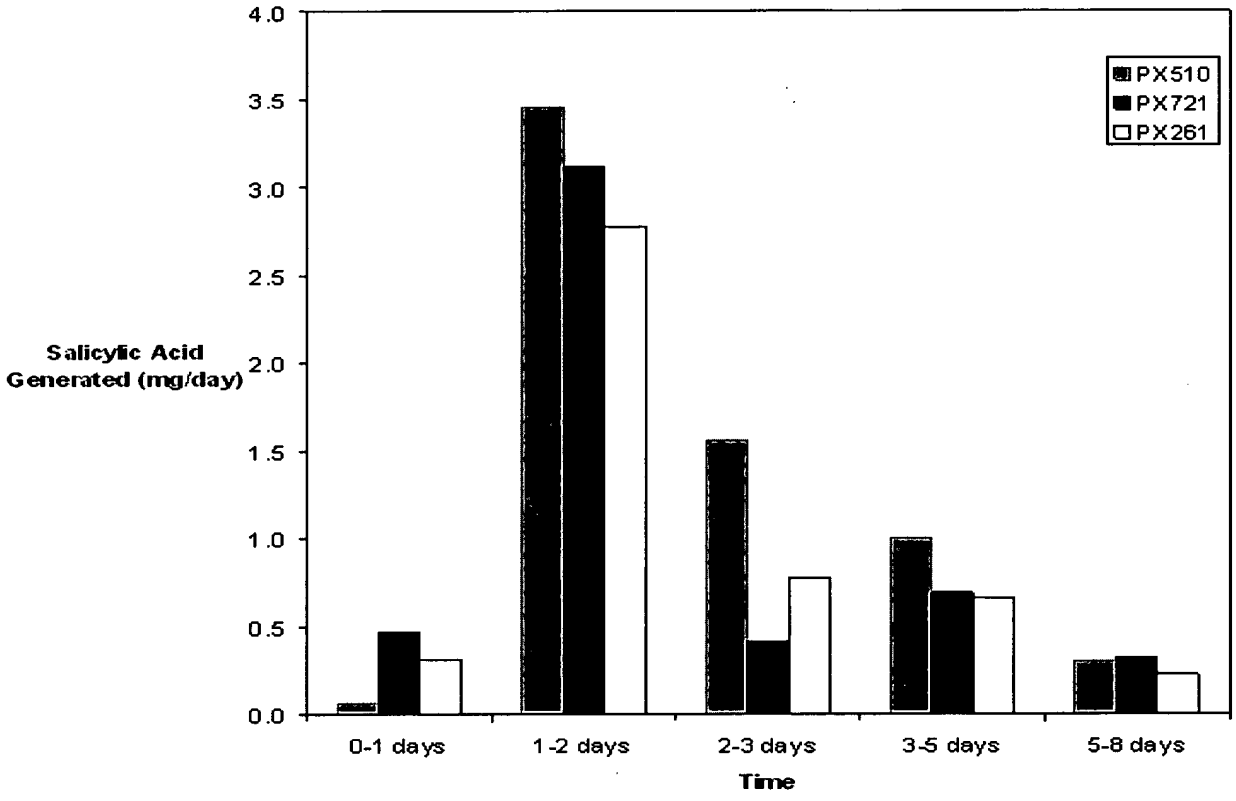

4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Salicylic Acid Generated (mg/day)
PX510
PX721
PX261
0-1 days
1-2 days
2-3 days
3-5 days
5-8 days
Time

Figure 8A

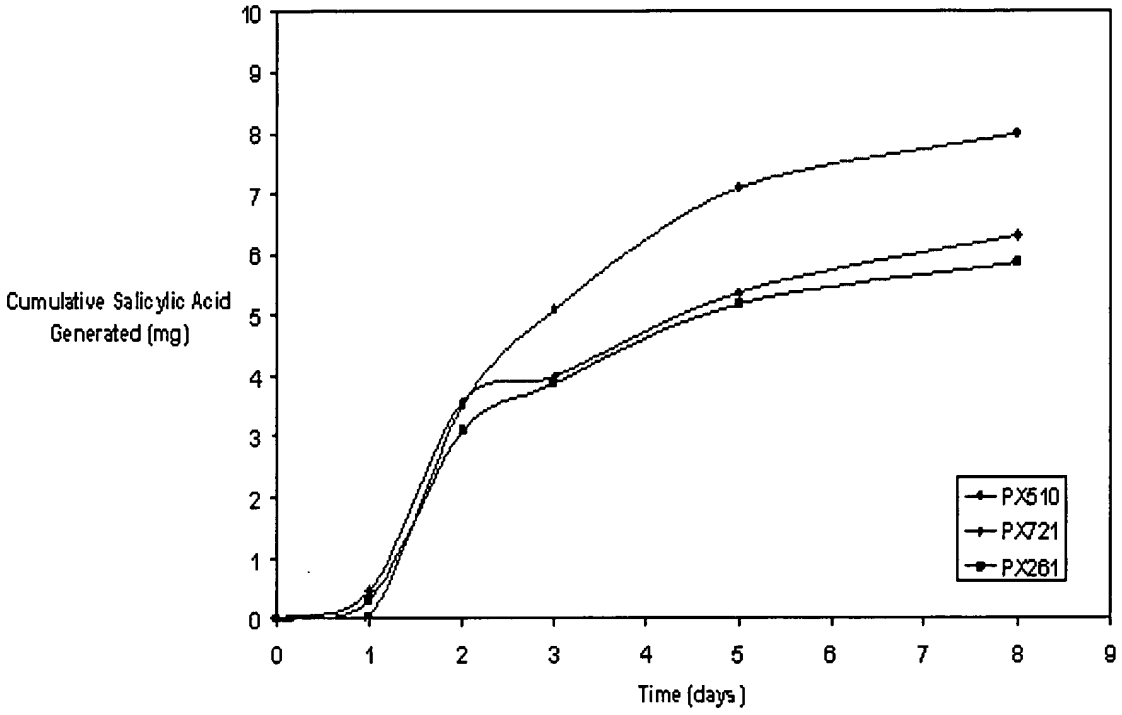

Cumulative Salicylic Acid Generated (mg)
10
9
8
7
6
5
4
3
2
1
0
0
1
2
3
4
5
6
7
8
9
Time (days)
PX510
PX721
PX261

Figure 8B

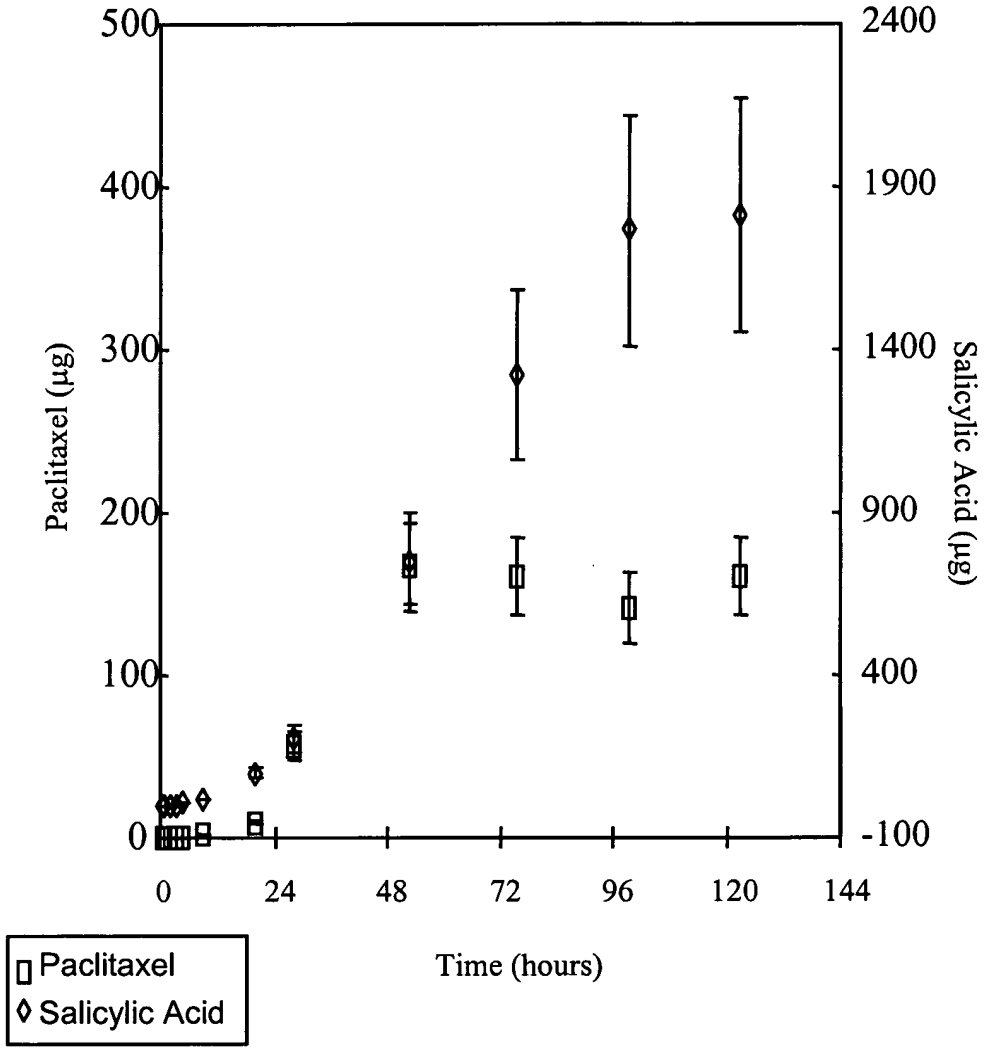

500
400
300
200
100
0
Paclitaxel (µg)
2400
1900
1400
900
400
-100
Salicylic Acid (µg)
0
24
48
72
96
120
144
Time (hours)
Paclitaxel
Salicylic Acid

Figure 9A

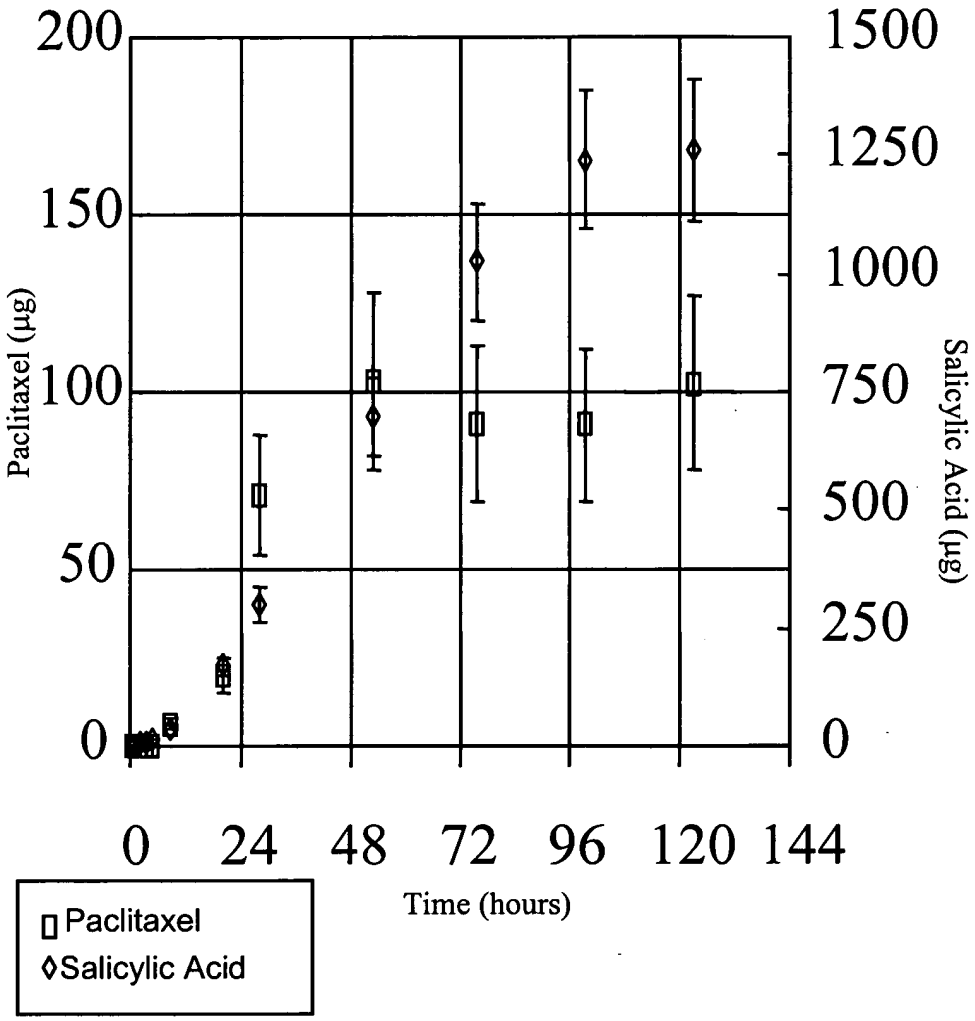

200
150
100
50
0
Paclitaxel (µg)
1500
1250
1000
750
500
250
0
Salicylic Acid (µg)
0 24 48 72 96 120 144
Time (hours)
Paclitaxel
Salicylic Acid

Figure 9B

Property	Formulation			
	PX510	PX721	PX261	PX749
T_g (°C)	44	38	29	16
Tensile modulus (MPa)	2.0 (25 °C) 5.1 (37 °C)			3.0 (25 °C)
Yield Strength (MPa)	Not observed			6.0 (25 °C)
Ultimate Elongation (%)	1.5 (25 °C) **350 (37 °C)**			500 (25 °C)

Figure 10

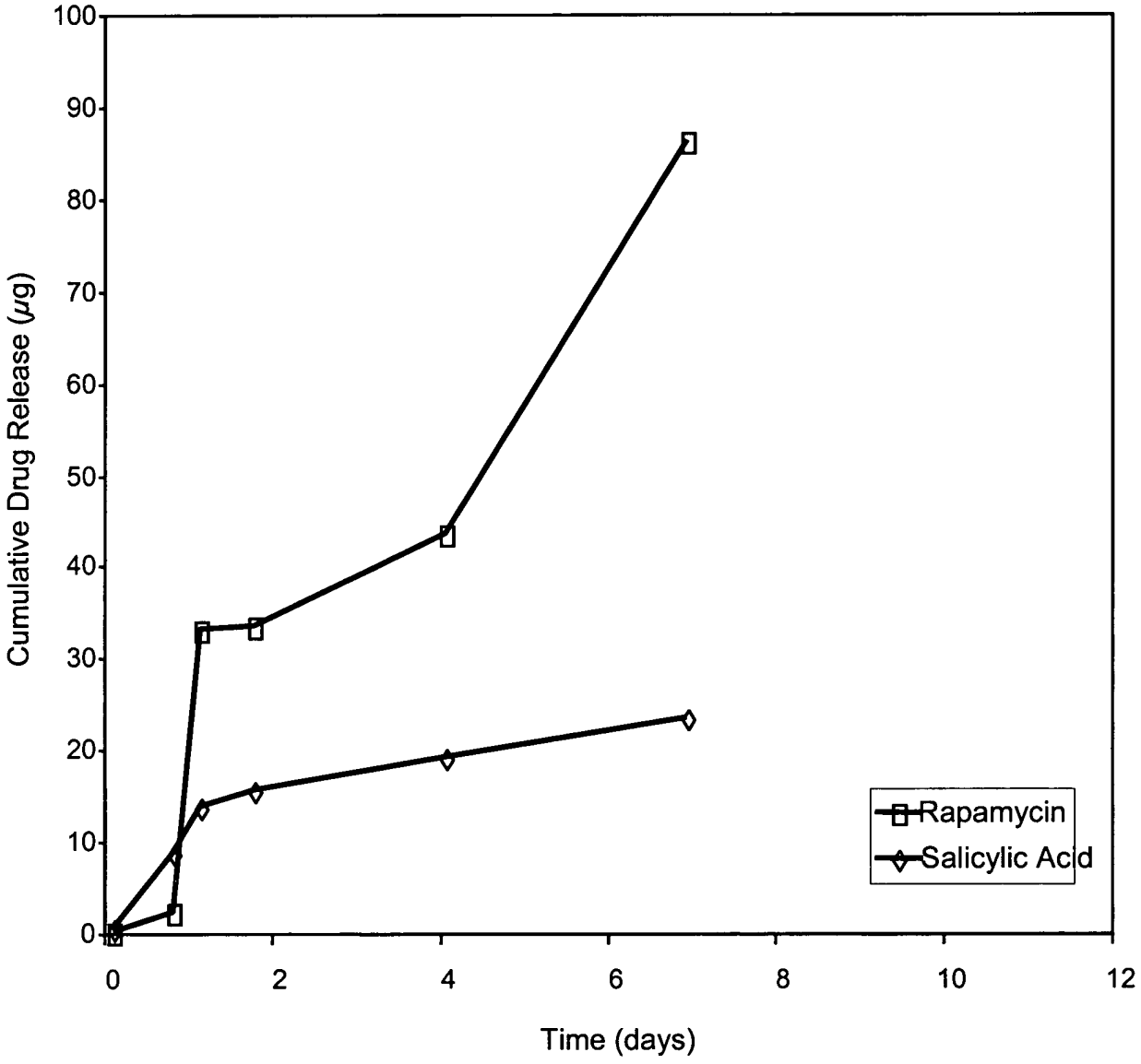

100
90
80
70
60
50
40
30
20
10
0
Cumulative Drug Release (μg)
0
2
4
6
8
10
12
Time (days)
Rapamycin
Salicylic Acid

Figure 11

	E Beam (3 MRad)			γ (25-35 KGys)		
Property	PX510	PX721	PX261	PX510	PX721	PX261
MW	-26%	-39%	-26%	-14%	N/C	N/C
Hardness	-2 units	N/C	-1 unit	N/C	-3 units	-2 units
Flexibility	N/C	N/C	N/C	N/C	N/C	N/C
Adhesion	N/C	N/C	-1 unit	N/C	N/C	N/C

N/C: no change

Figure 12

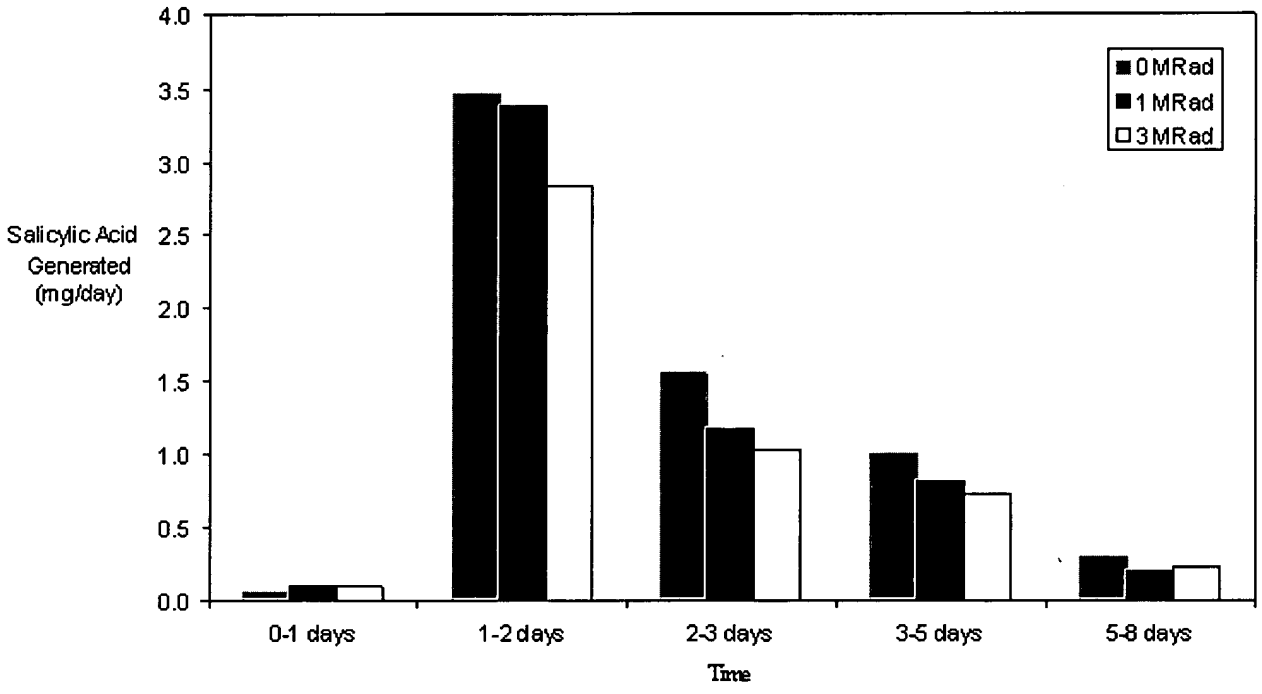

4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Salicylic Acid Generated (mg/day)
0 MRad
1 MRad
3 MRad
0-1 days
1-2 days
2-3 days
3-5 days
5-8 days
Time

Figure 13A

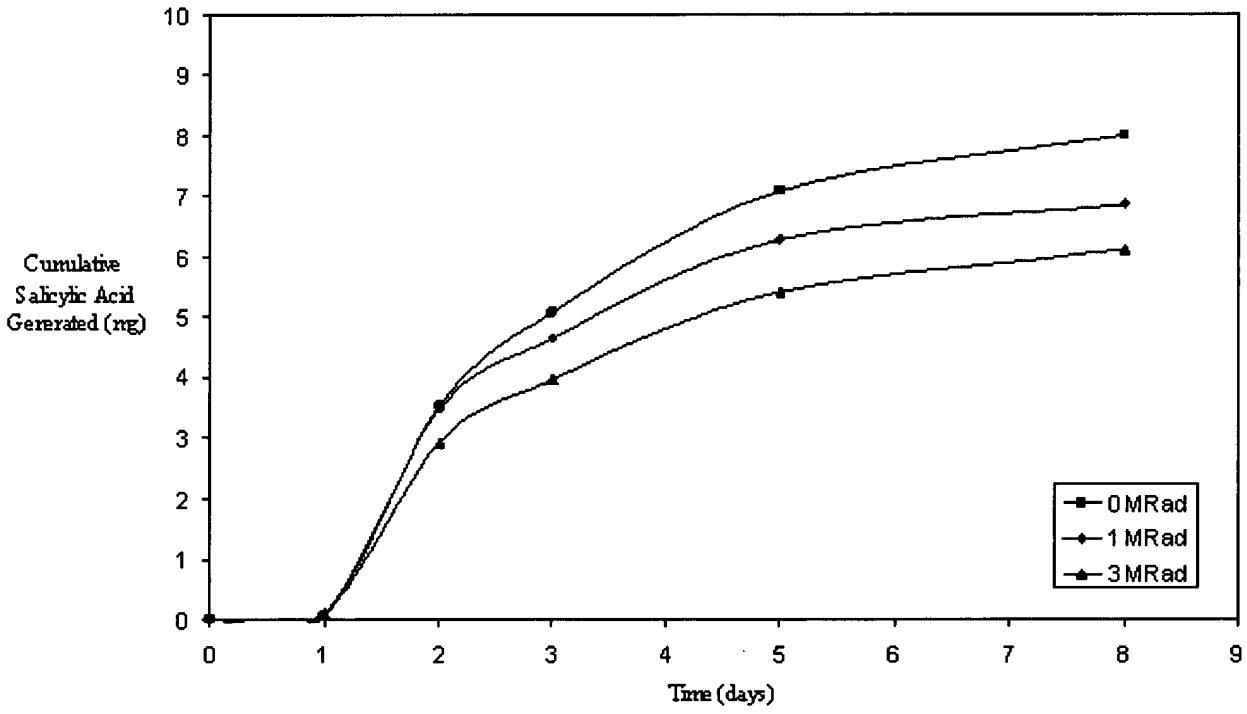

Cumulative Salicylic Acid Generated (mg)
10
9
8
7
6
5
4
3
2
1
0
0
1
2
3
4
5
6
7
8
9
Time (days)
0 MRad
1 MRad
3 MRad

Figure 13B

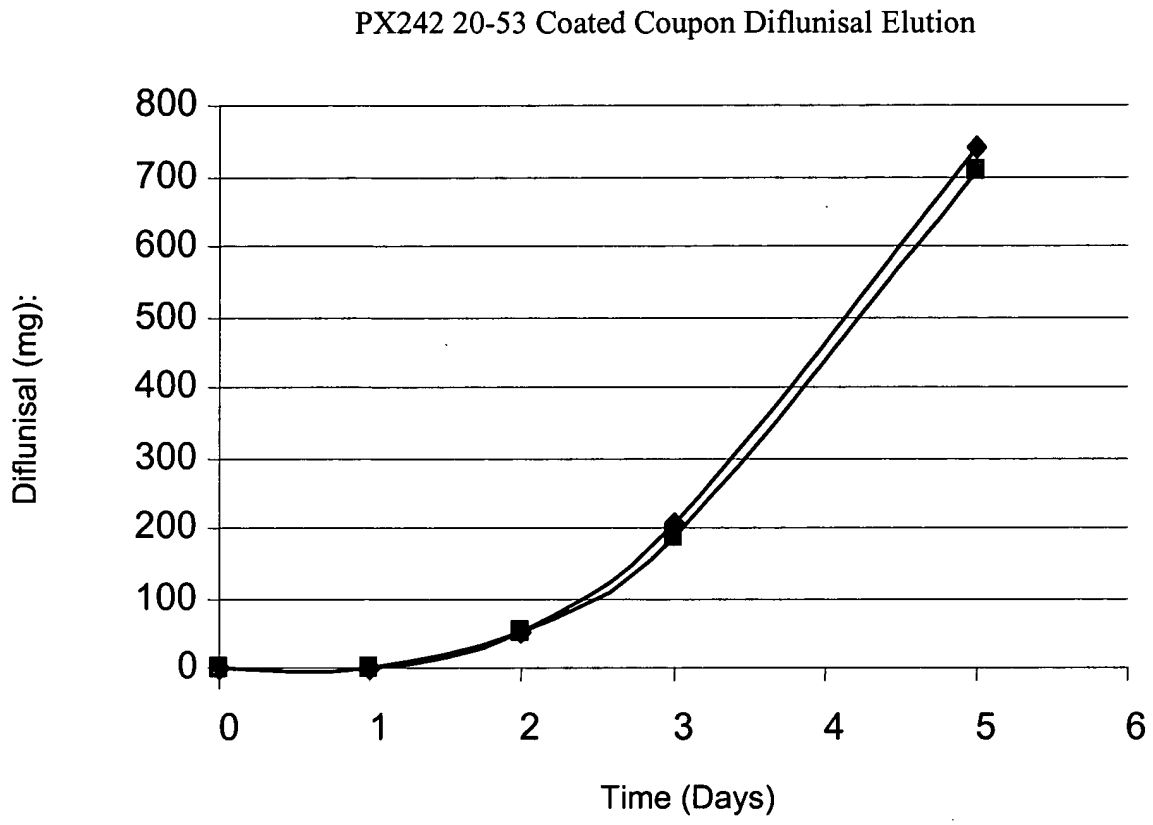

PX242 20-53 Coated Coupon Diflunisal Elution
Diflunisal (mg):
800
700
600
500
400
300
200
100
0
0
1
2
3
4
5
6
Time (Days)

Figure 14

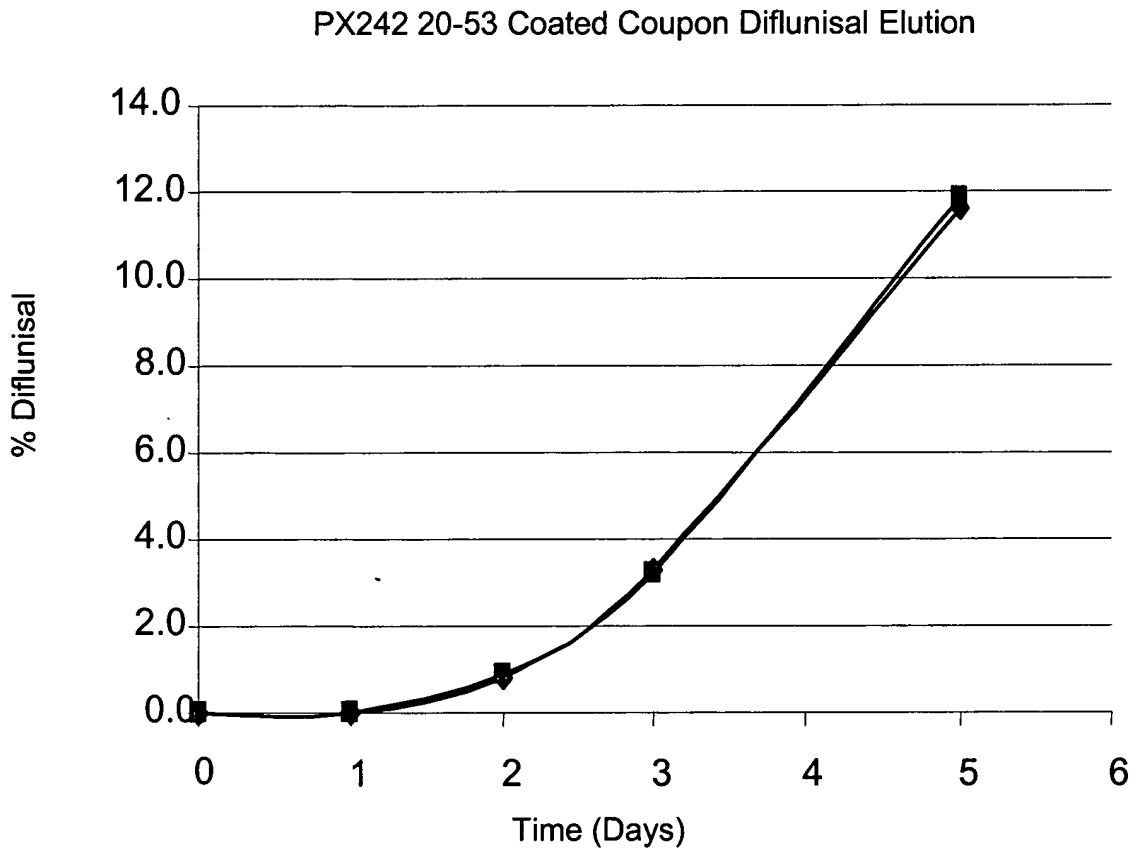

PX242 20-53 Coated Coupon Diflunisal Elution
% Diflunisal
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
0
1
2
3
4
5
6
Time (Days)

Figure 15

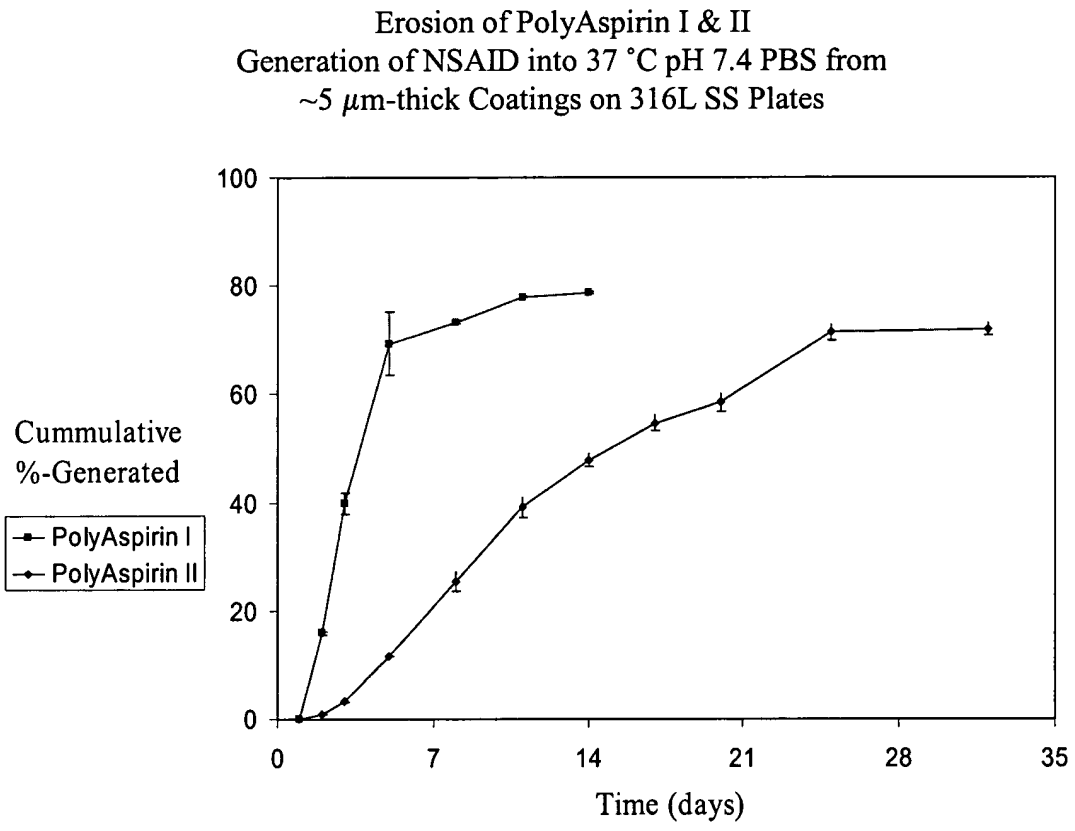

Erosion of PolyAspirin I & II
Generation of NSAID into 37 °C pH 7.4 PBS from
~5 μm-thick Coatings on 316L SS Plates
Cummulative
%-Generated
PolyAspirin I
PolyAspirin II
100
80
60
40
20
0
0
7
14
21
28
35
Time (days)

Figure 16

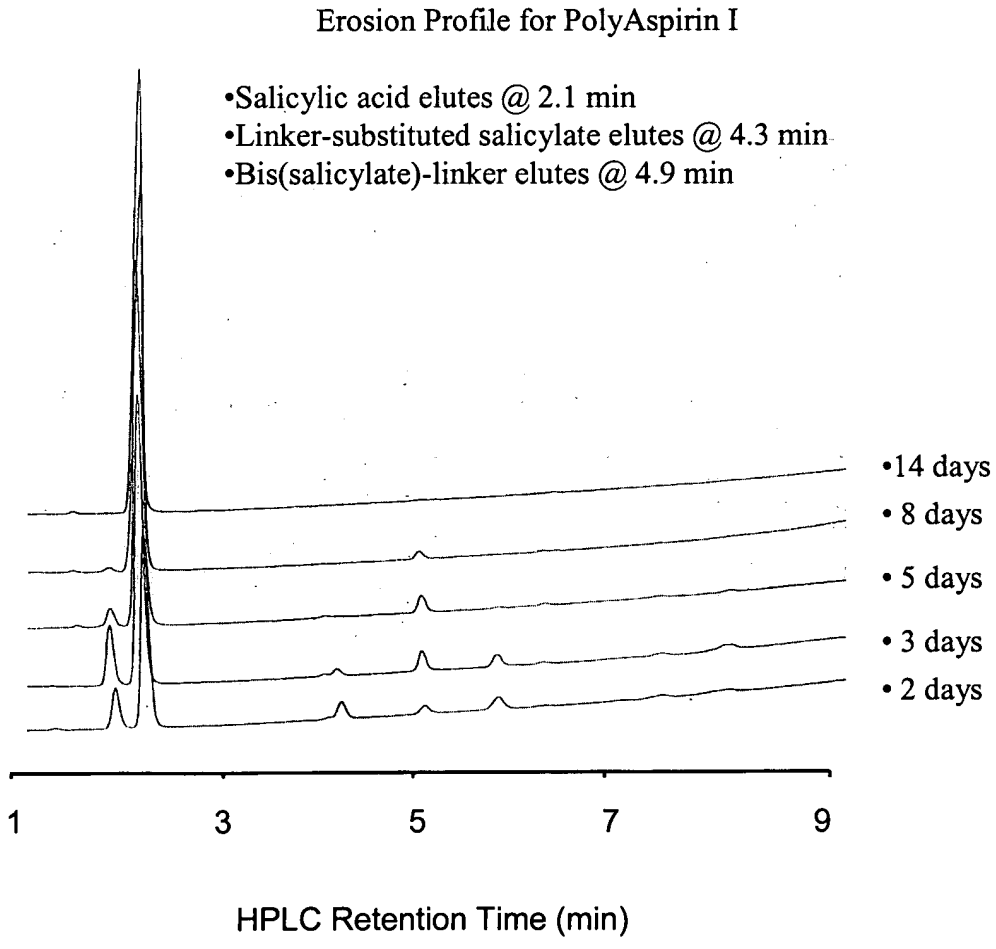

Erosion Profile for PolyAspirin I
•Salicylic acid elutes @ 2.1 min
•Linker-substituted salicylate elutes @ 4.3 min
•Bis(salicylate)-linker elutes @ 4.9 min
•14 days
• 8 days
• 5 days
• 3 days
• 2 days
1
3
5
7
9
HPLC Retention Time (min)

Figure 17

Erosion Profile for PolyAspirin II

Diflunisal elutes @ 7.1 min
Linker-substituted Diflunisal elutes @ 9.0 min
Bis(diflunisal)-linker elutes @ 12 min

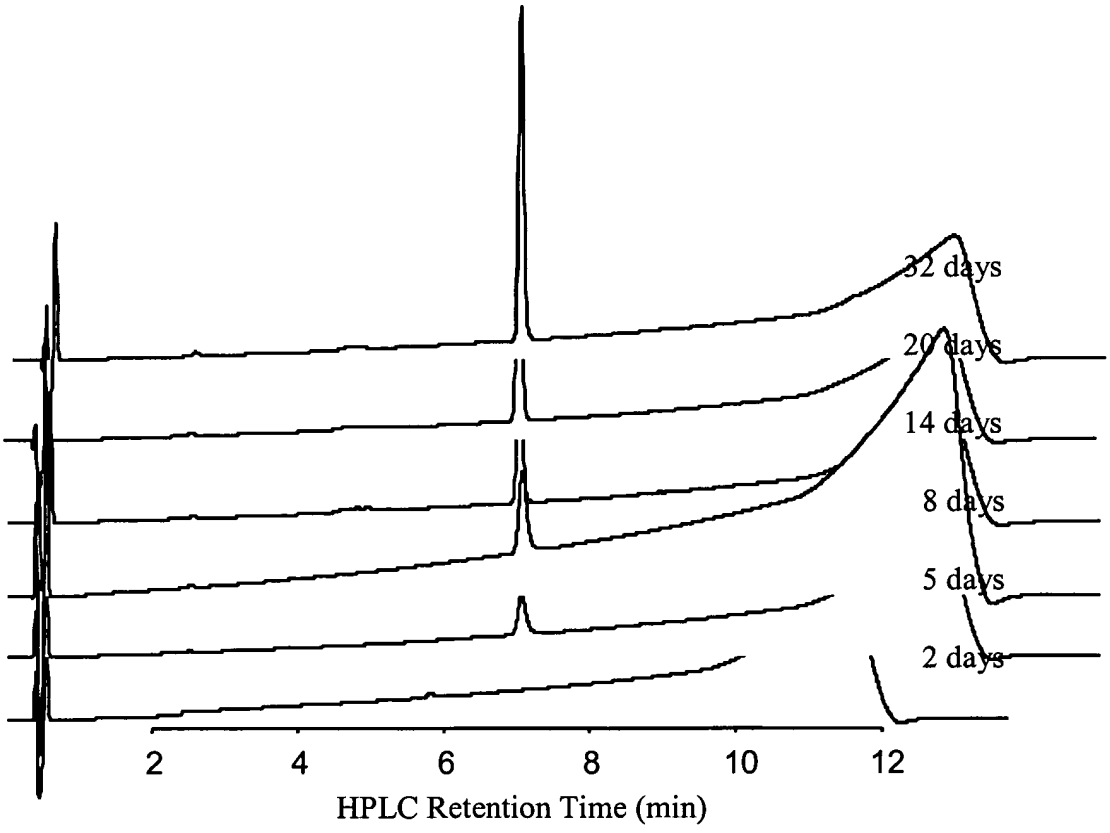


Figure 18

Effect of MW on Erosion

Generation of Diflunisal from PolyAspirin II into
37 °C Serum from Coatings on 316L SS Plates

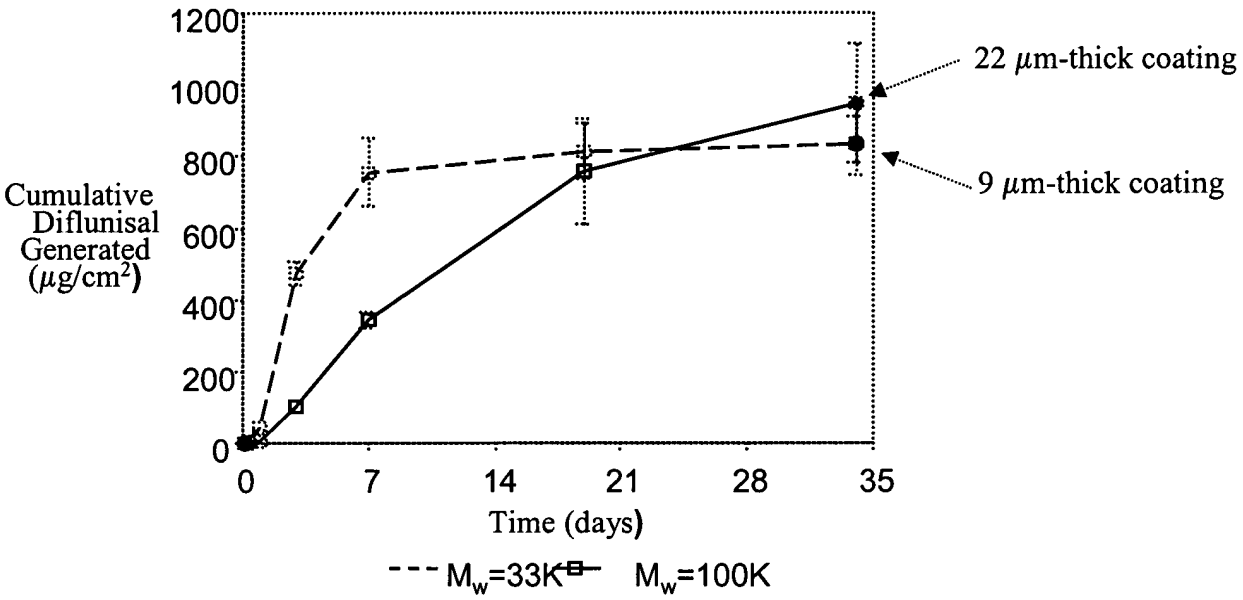


Figure 19

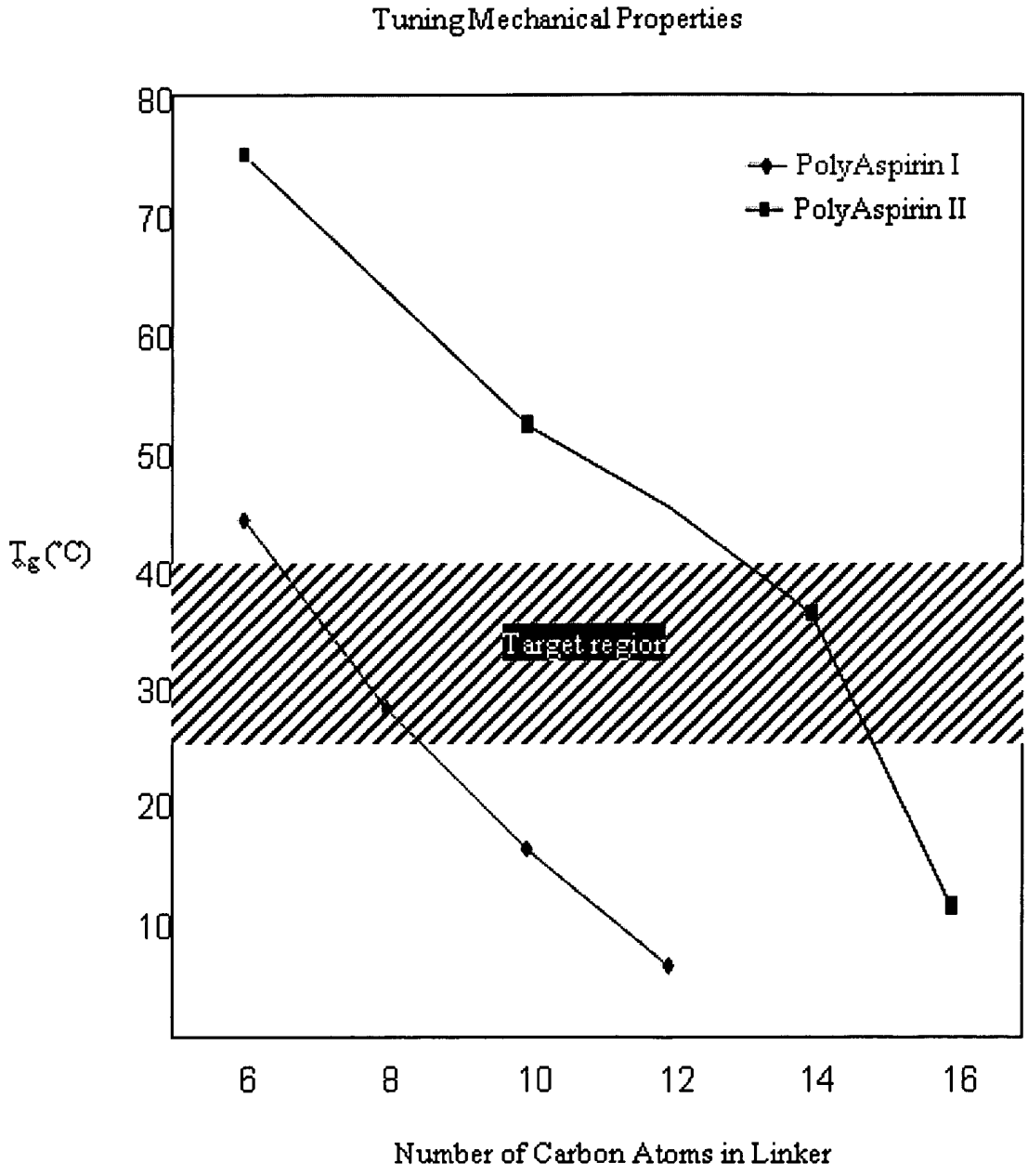

Tuning Mechanical Properties
80
70
60
50
40
30
20
10
T_g (°C)
PolyAspirin I
PolyAspirin II
Target region
6
8
10
12
14
16
Number of Carbon Atoms in Linker

Figure 20

Thermoanalysis of PolyAspirin™

Property	PolyAspirin I	PolyAspirin II	
	PX261	PX657	
	Mw ~ 20K	M_w ~ 33K	M_w ~ 100K
T_g (°C)	29	36	44
Ultimate Stress (kPa)	1700 (25°C) >2000 (37°C)	>2800 (25°C)	>2600 (25°C)
Ultimate Elongation (%)	>500 (25°C) >500 (37°C)	>4 (25°C)	>500 (25°C)
Toughness (kPa)	>3900 (25°C) >4400 (37°C)	>560 (25°C)	>4000 (25°C)

Figure 21

Properties of PolyAspirin™ Coatings

Test	PolyAspirin I	PolyAspirin II	
	PX261	PX657	
	Mw ~ 20K	Mw ~ 33K	Mw ~ 100K
Hardness			
Ambient	B	F	3H
5 min in PBS, 37 °C	B	2B	B
1 hr in PBS, 37 °C	-	8B	4B
Flexibility			
Ambient	<3 mm	<3 mm	<3 mm
5 min in PBS, 37 °C	<3 mm	<3 mm	<3 mm
1 hr in PBS, 37 °C	-	<3 mm	<3 mm
Adhesion			
Ambient	5B	5B	5B

Figure 22

PolyAspirin Coatings with Admixtures

Test	PolyAspirin II (PX657)	
	No Admixture	20% Paclitaxel Admixed
Hardness		
Ambient	F	F
5 min in PBS, 37 °C	2B	F
1 hr in PBS, 37 °C	8B	6B
Flexibility		
Ambient	<3 mm	<3 mm
5 min in PBS, 37 °C	<3 mm	<3 mm
1 hr in PBS, 37 °C	<3 mm	<3 mm
Adhesion		
Ambient	5B	5B

Figure 23

Erosion of PolyAspirin I & II

Diflunisal Generation & Paclitaxel Release into 37 °C Serum from ~5 μm-thick Coatings on 316L SS Plates

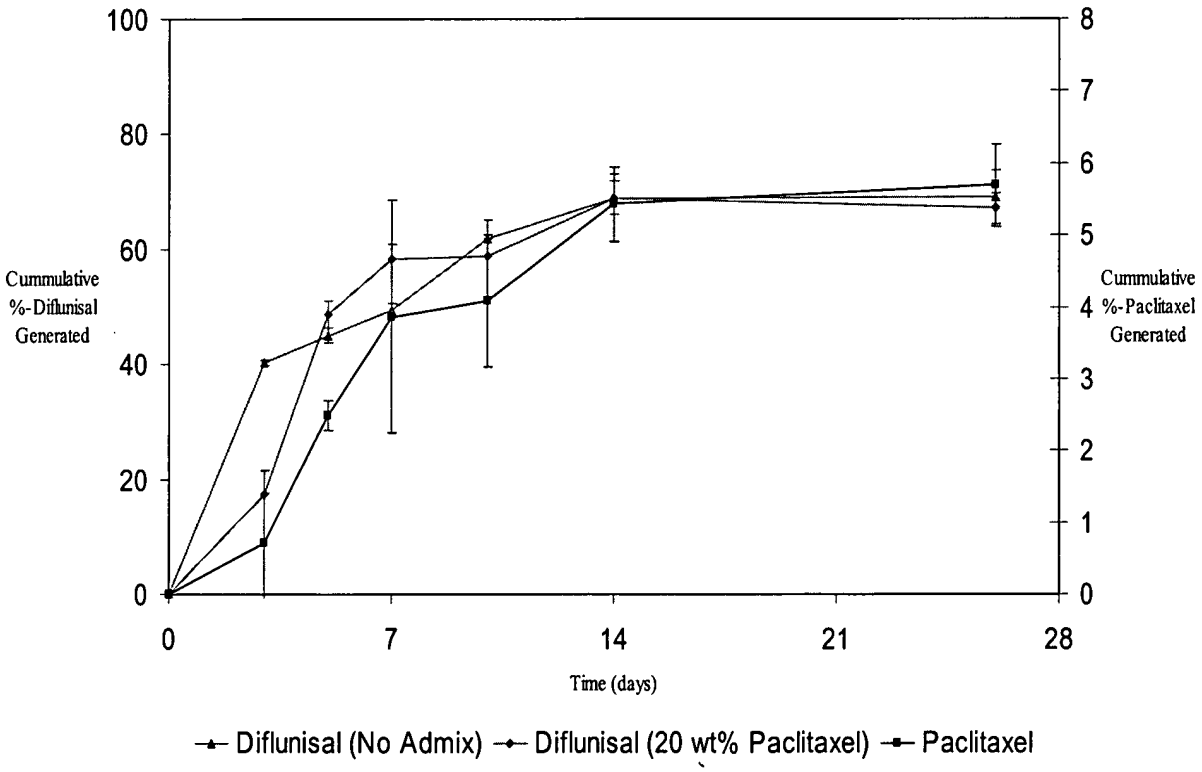


Figure 24

Erosion of Sterilized PolyAspirin II

Generation of Diflunisal into 37 °C Serum from ~5 μm-thick Coatings on 316L SS Plates

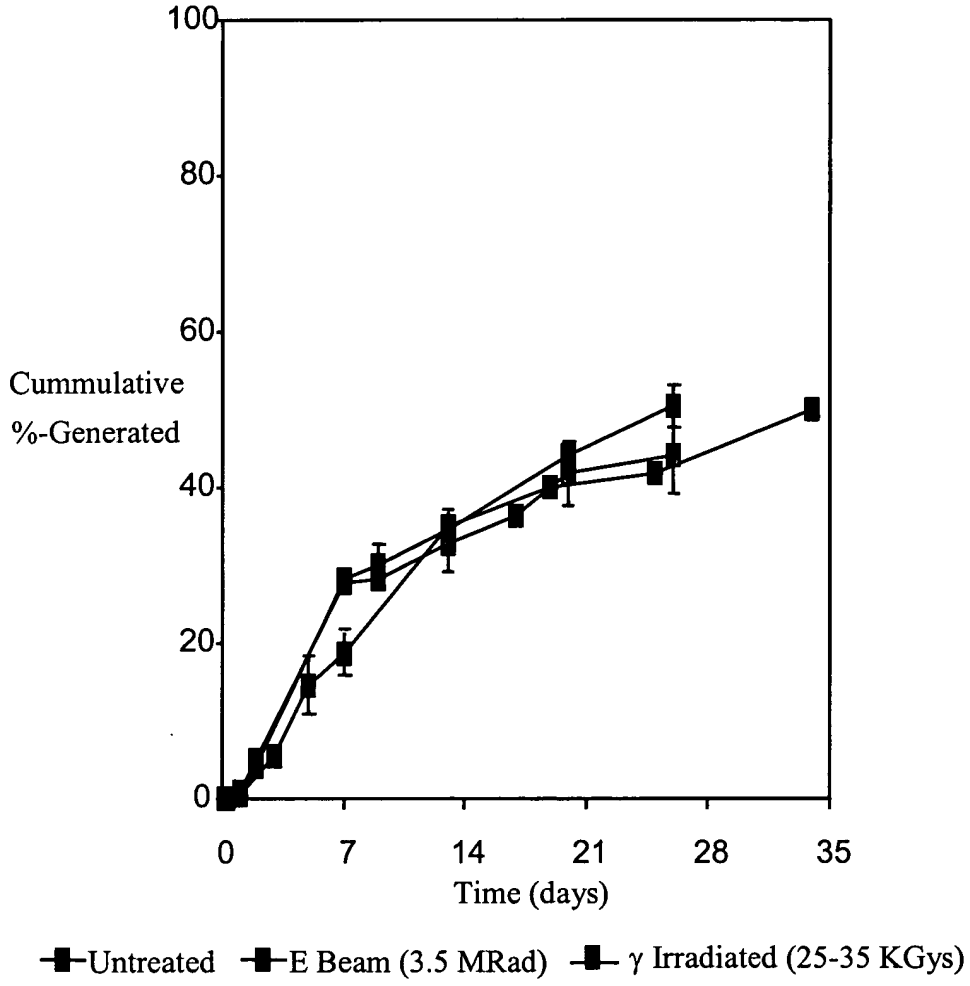


Figure 25

N/C: no change	γ Irradiation (25-35 Kgys)	
	PolyAspirin I	PolyAspirin II
Property	PX261 $M_w \sim 20K$	PX657 $M_w \sim 100K$
MW	N/C	-50%
Hardness	-2 units	-3 units
Flexibility	N/C	-
Adhesion	N/C	-

Figure 26

E Beam (3-4.5 MRad)

•Property	•PX261 •M_w ~ 20 K	•M_w ~ 33K	•M_w ~ 80K
•MW	•-26%	•+5%	•-30%
•Hardness	•-1 unit •PolyAspirin I	•+2 units •PolyAspirin II	•N/C
•Flexibility	•N/C	•- •PX657	•N/C
•Adhesion	•-1 unit	•-	•-

Figure 27

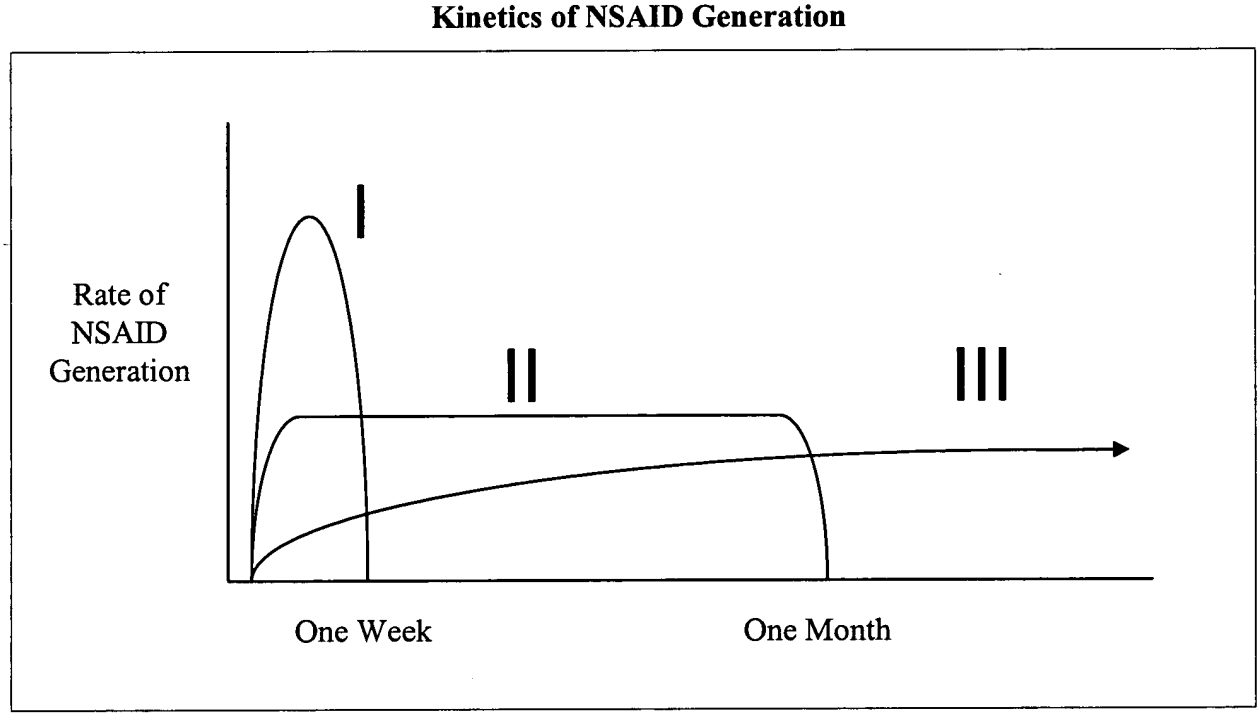

Kinetics of NSAID Generation
Rate of NSAID Generation
I
II
III
One Week
One Month

Figure 28

Figure 29

Figure 30

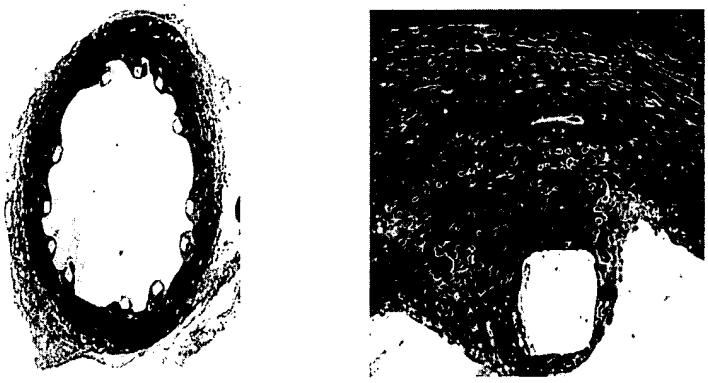


Figure 31

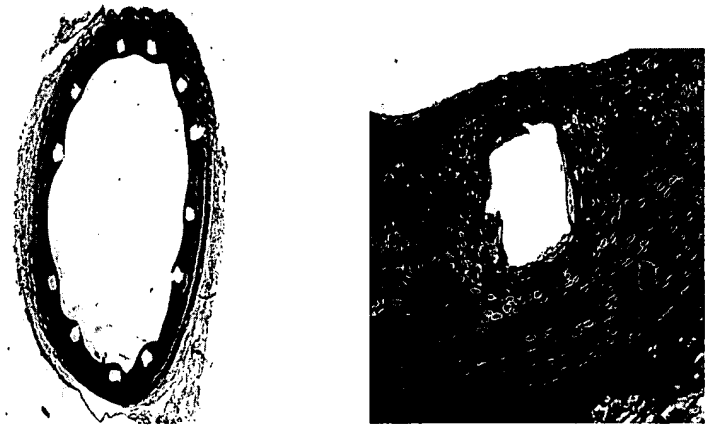


Figure 32

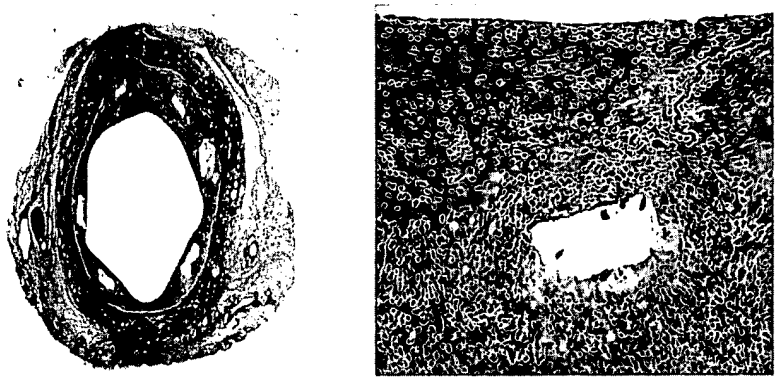


Figure 33

Figure 34

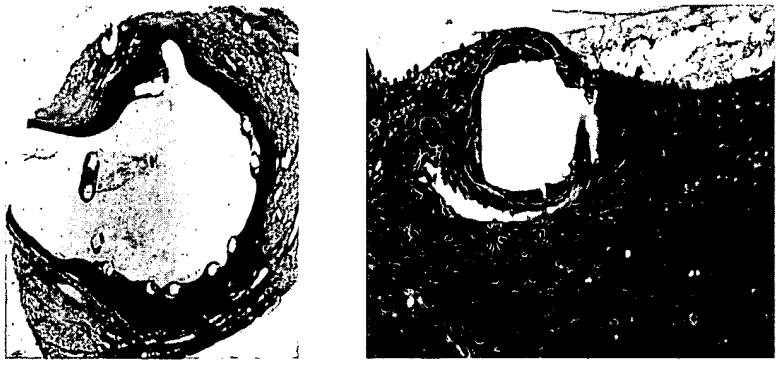
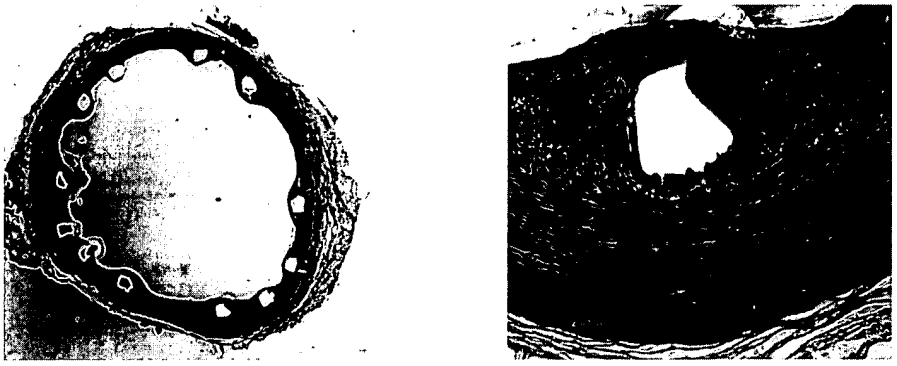


Figure 35



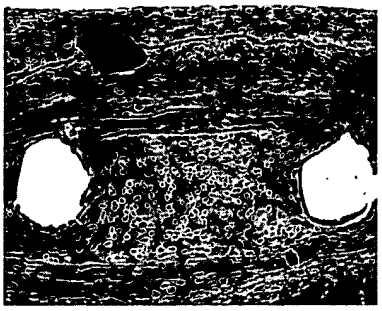


Figure 36

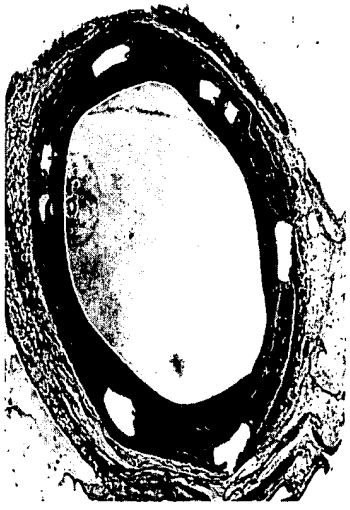


Figure 37

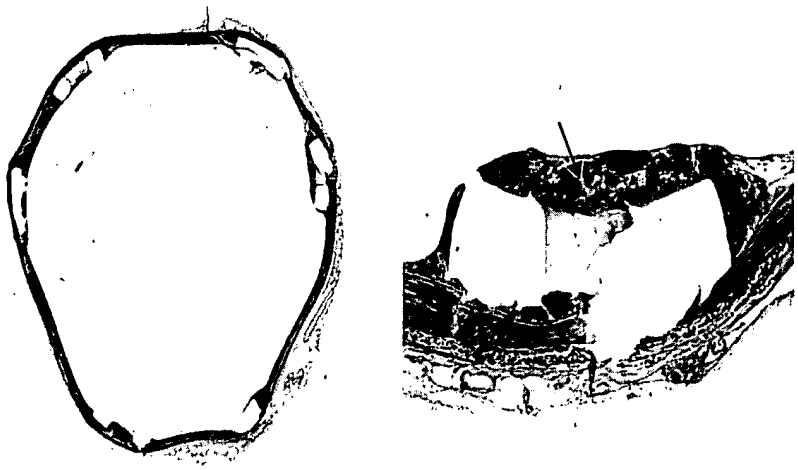


Figure 38

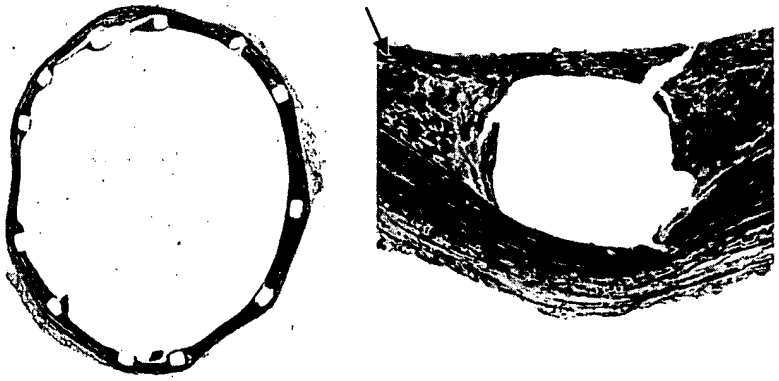


Figure 39

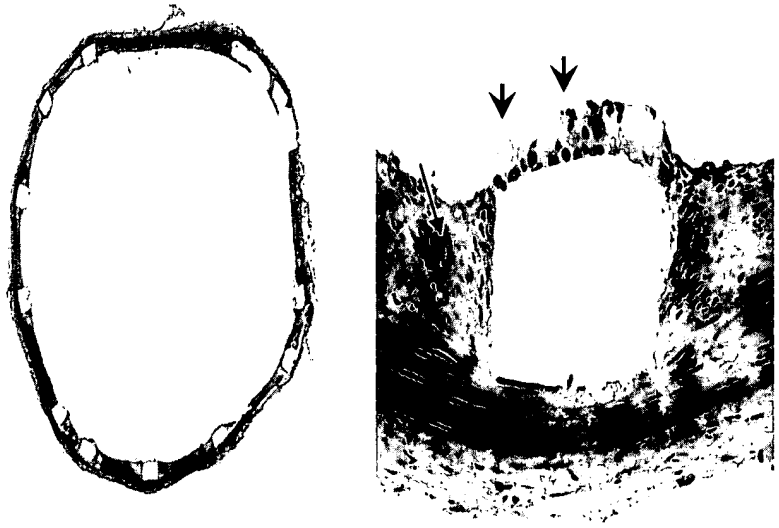


Figure 40

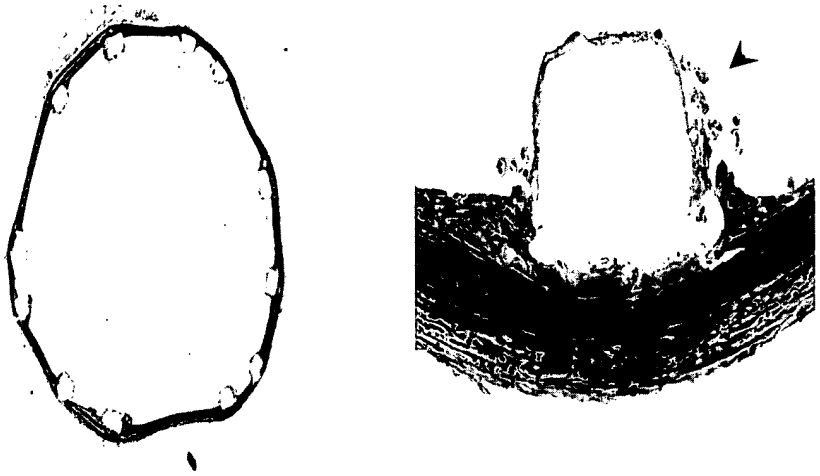


Figure 41

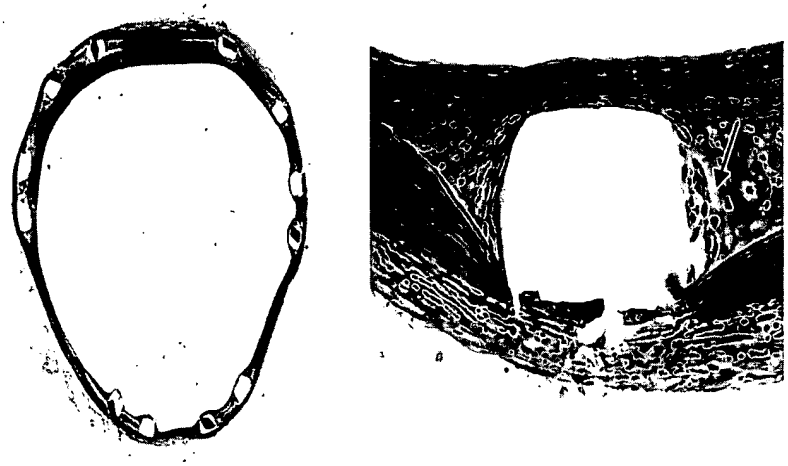


Figure 42

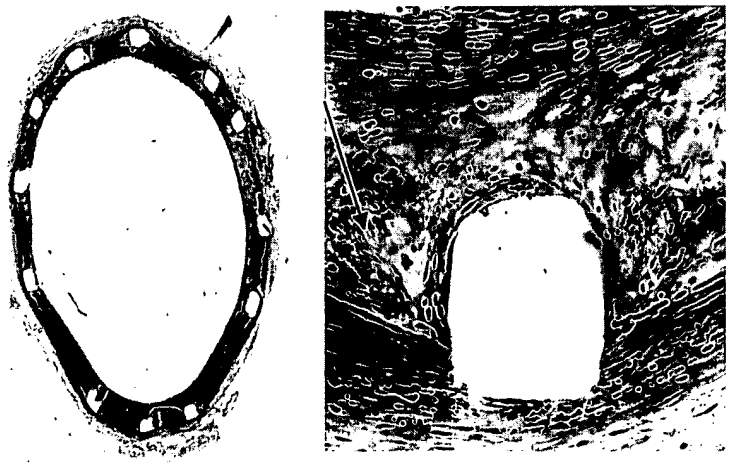
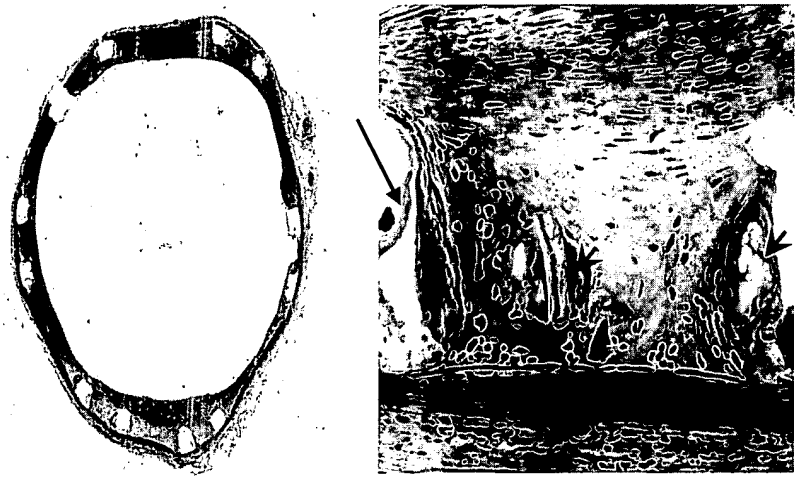


Figure 43



uncrimped/unexpanded

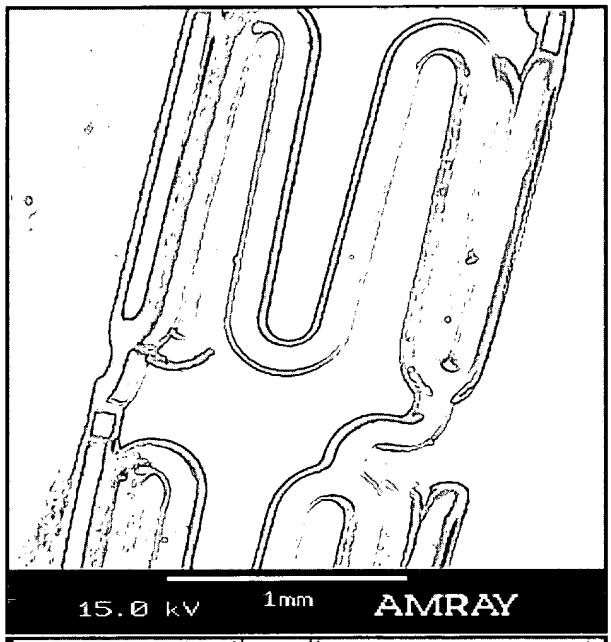


Fig. 44a

Fig. 44b

Figure 44

uncrimped/unexpanded

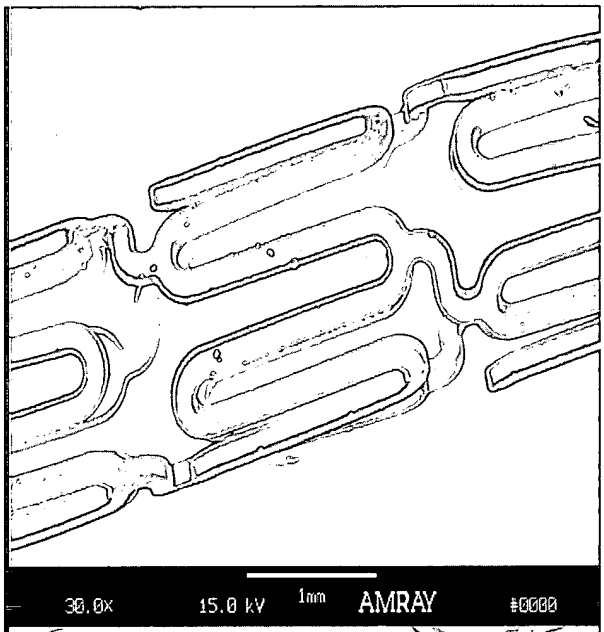


Fig. 45a

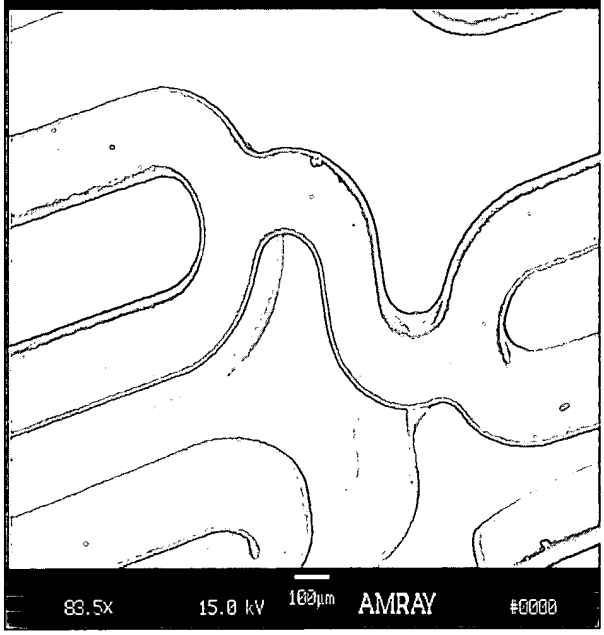


Fig. 45b

Figure 45

Uncrimped/unexpanded

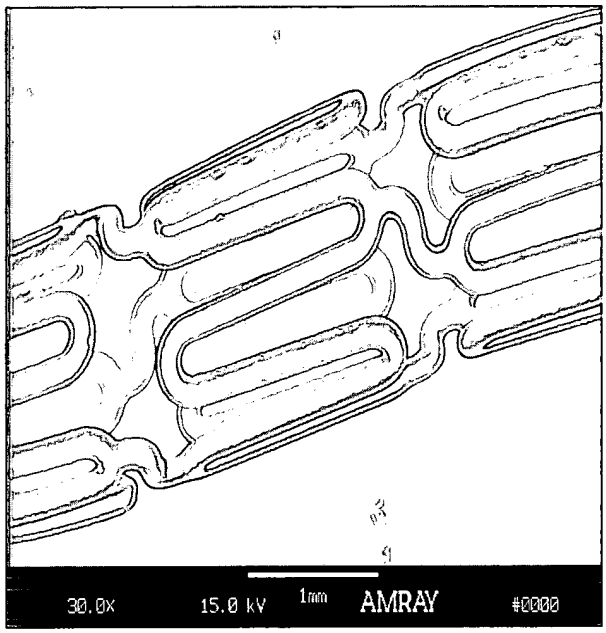


Fig. 46a

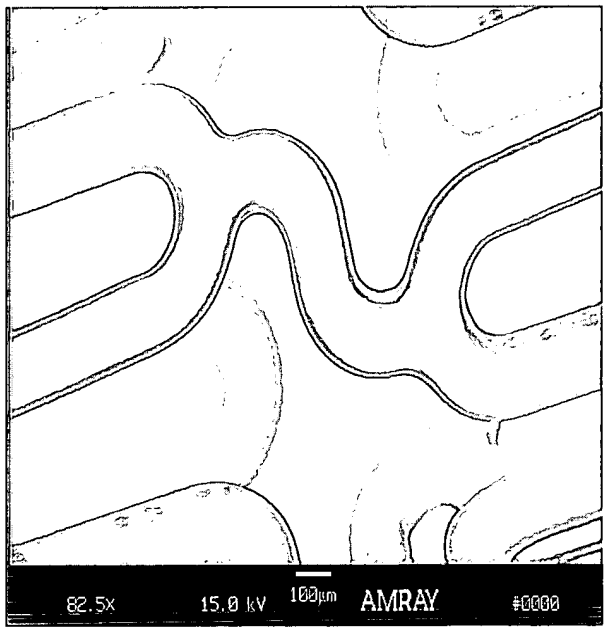


Fig. 46b

Figure 46

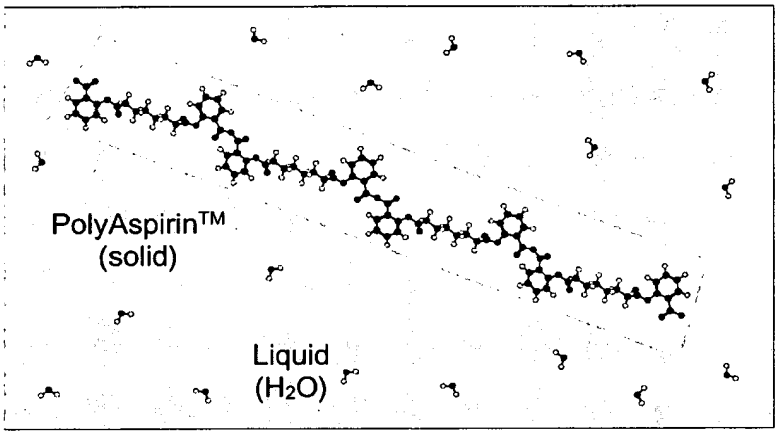


Figure 47

Figure 48

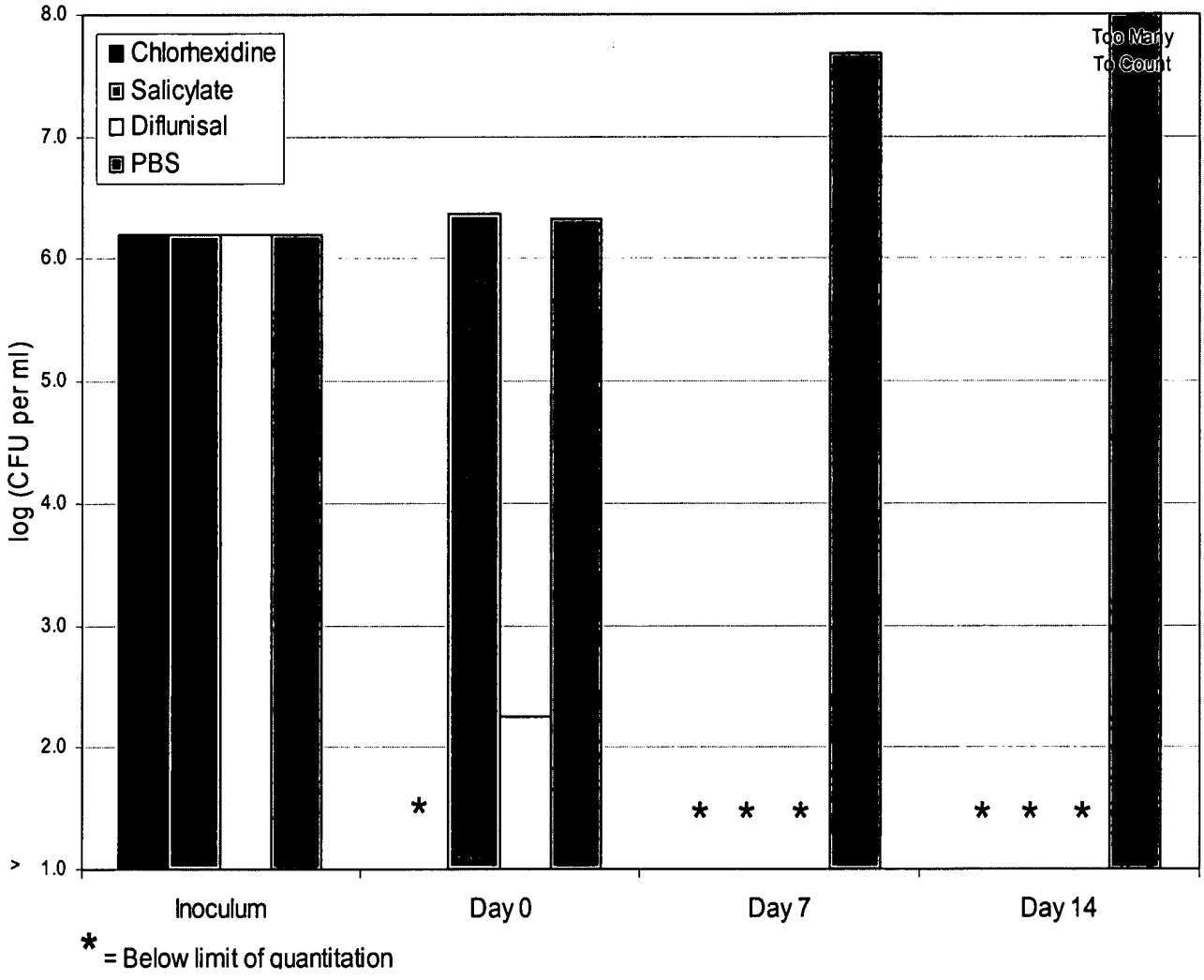

8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
log (CFU per ml)
Chlorhexidine
Salicylate
Diflunisal
PBS
Too Many To Count
Inoculum
Day 0
Day 7
Day 14
* = Below limit of quantitation

Figure 49

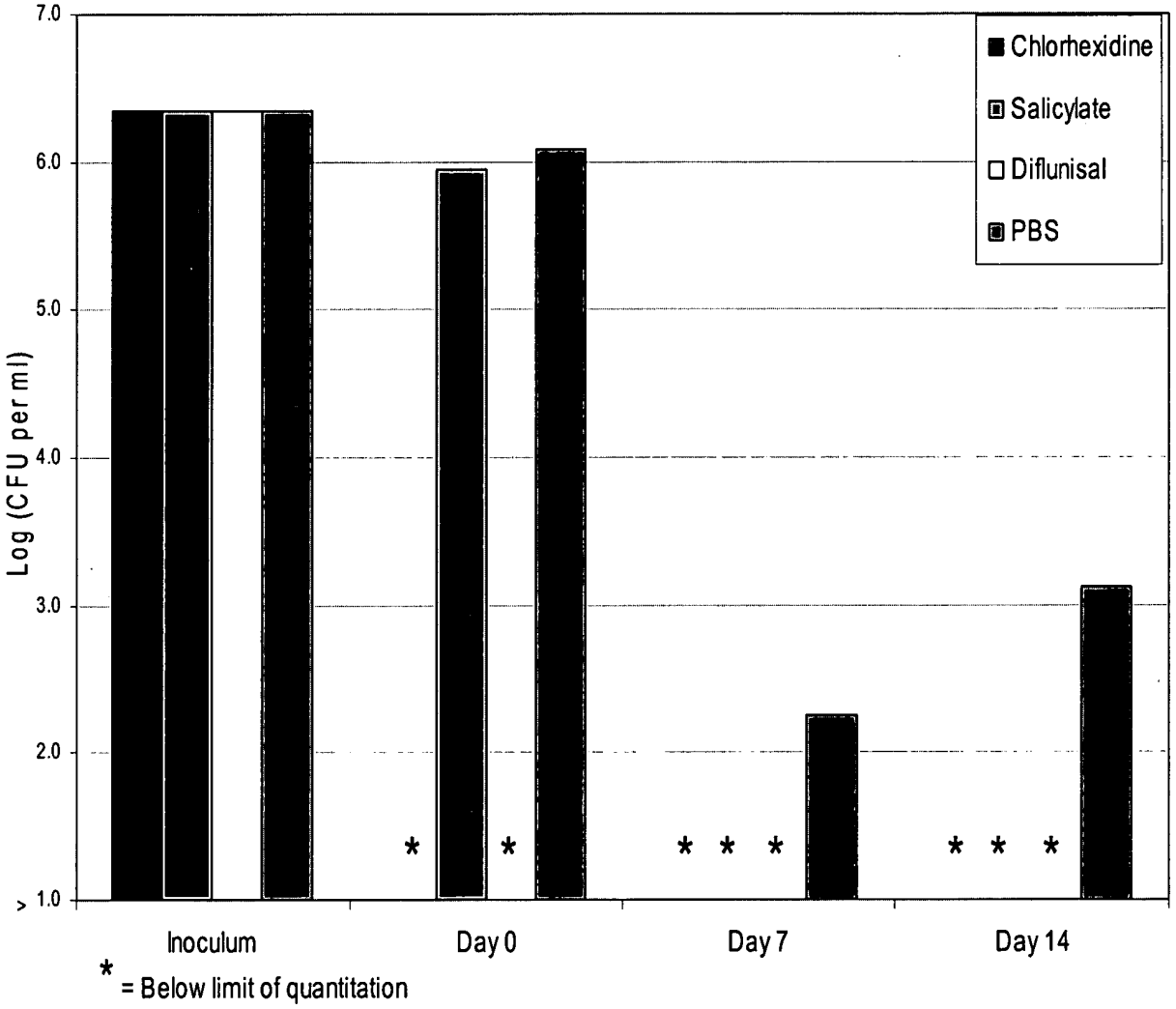

7.0
6.0
5.0
4.0
3.0
2.0
> 1.0
Log (CFU per ml)
Chlorhexidine
Salicylate
Diflunisal
PBS
Inoculum
Day 0
Day 7
Day 14
* = Below limit of quantitation

Figure 50

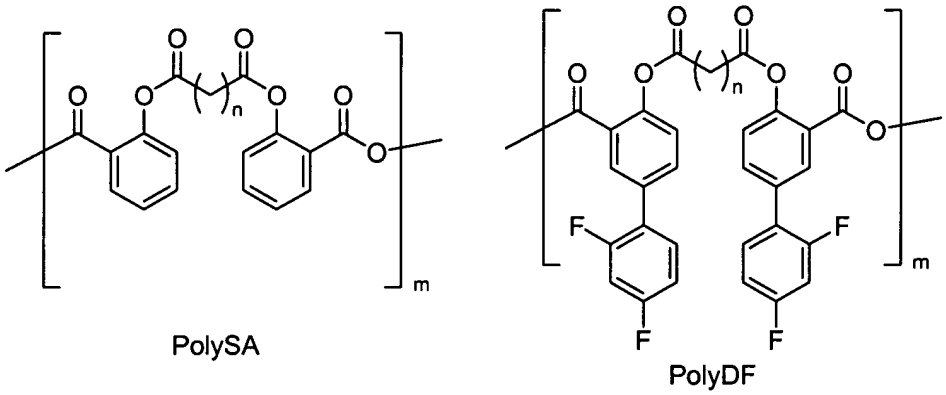


Figure 51

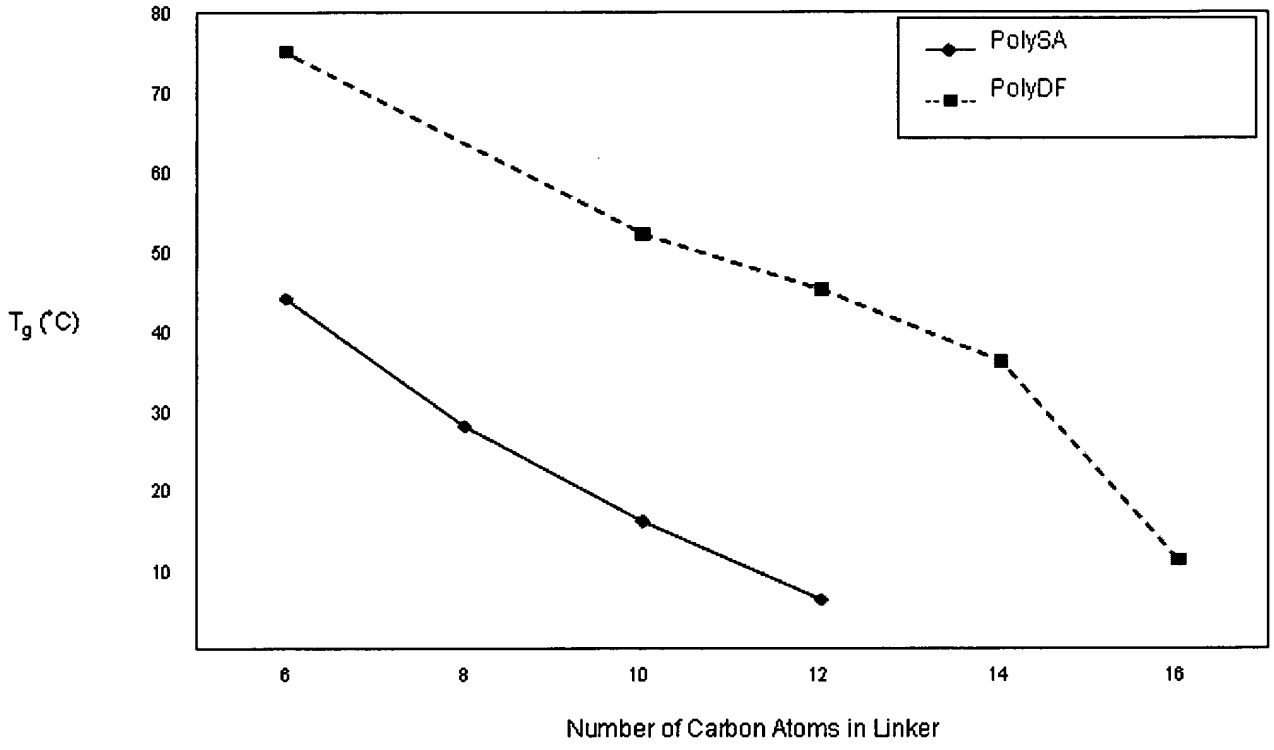

80
70
60
50
40
30
20
10
T_g (°C)
PolySA
PolyDF
6
8
10
12
14
16
Number of Carbon Atoms in Linker

Figure 52

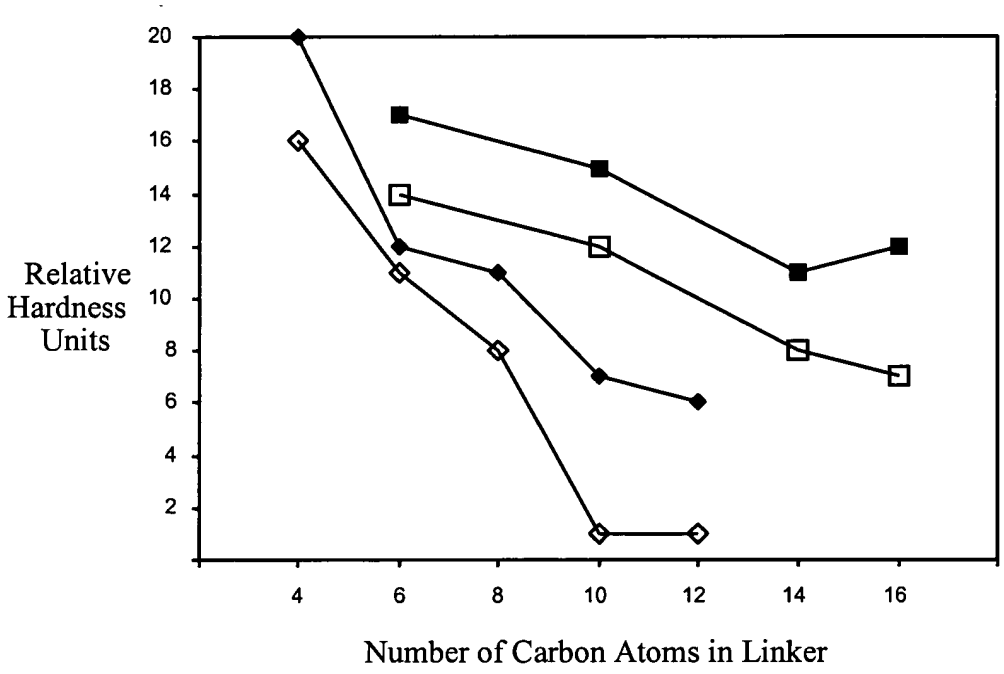

Relative Hardness Units
20
18
16
14
12
10
8
6
4
2
4
6
8
10
12
14
16
Number of Carbon Atoms in Linker
PolySAA
PolyDF
Closed: Ambient
Open: Soaked 5 min in 37 °C PBS

Figure 53

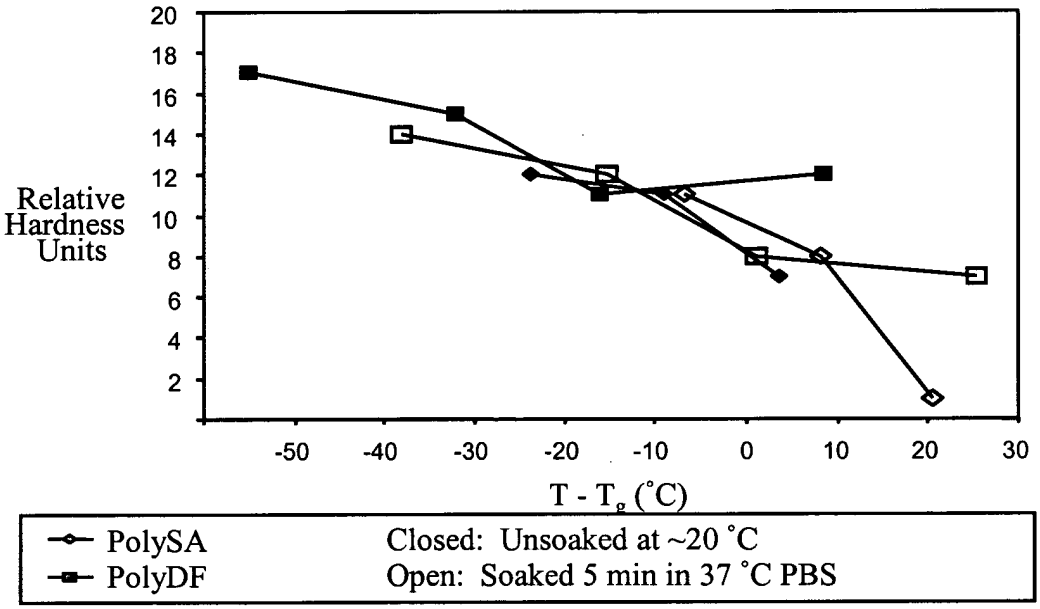

Relative Hardness Units
20
18
16
14
12
10
8
6
4
2
-50
-40
-30
-20
-10
0
10
20
30
T - Tg (°C)
PolySA
PolyDF
Closed: Unsoaked at ~20 °C
Open: Soaked 5 min in 37 °C PBS

Figure 54

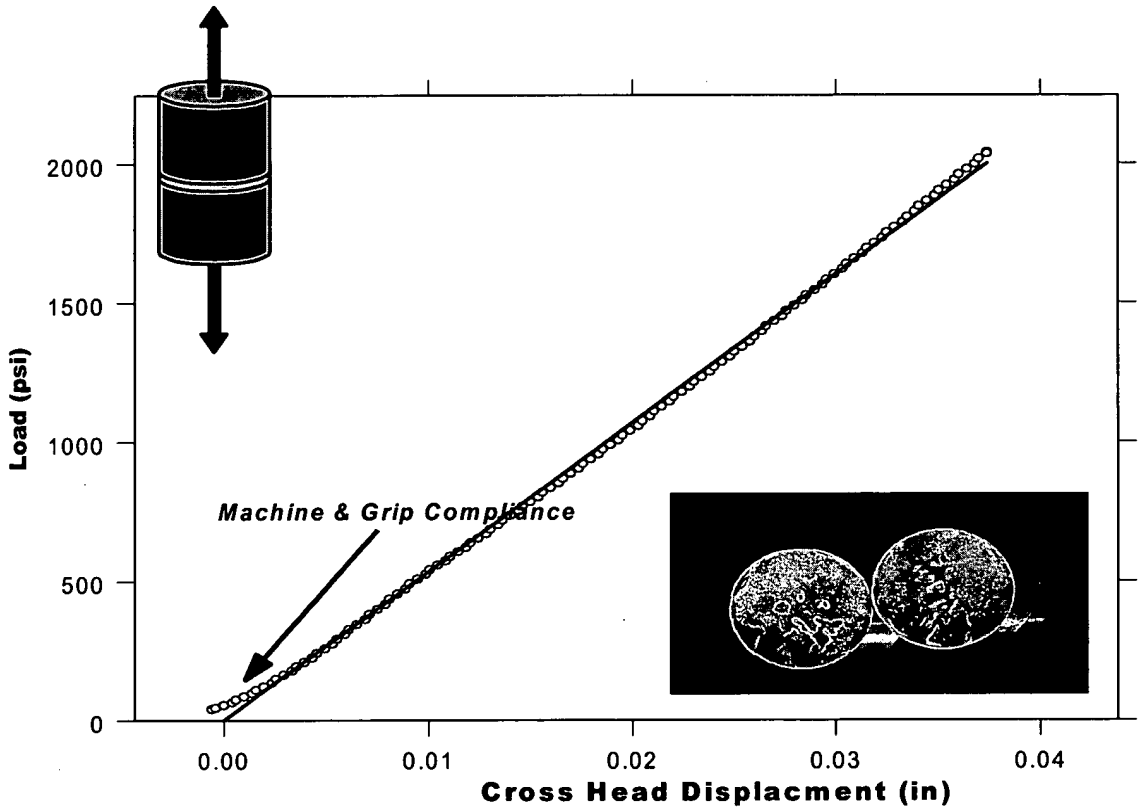

2000
1500
1000
500
0
Load (psi)
Machine & Grip Compliance
0.00
0.01
0.02
0.03
0.04
Cross Head Displacment (in)

Figure 55

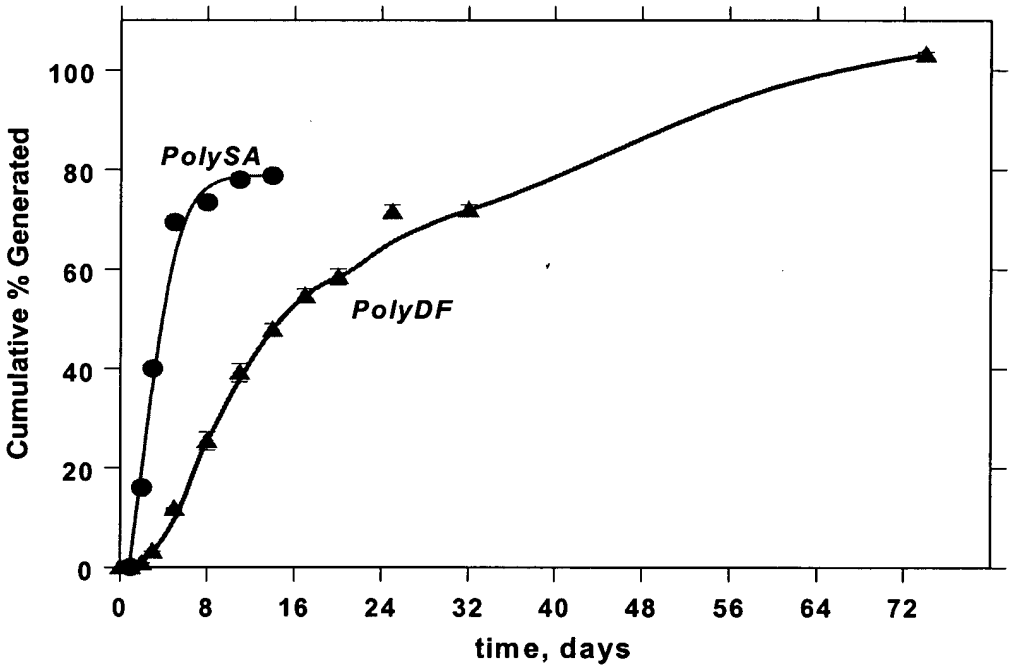

Cumulative % Generated
100
80
60
40
20
0
PolySA
PolyDF
0
8
16
24
32
40
48
56
64
72
time, days

Figure 56

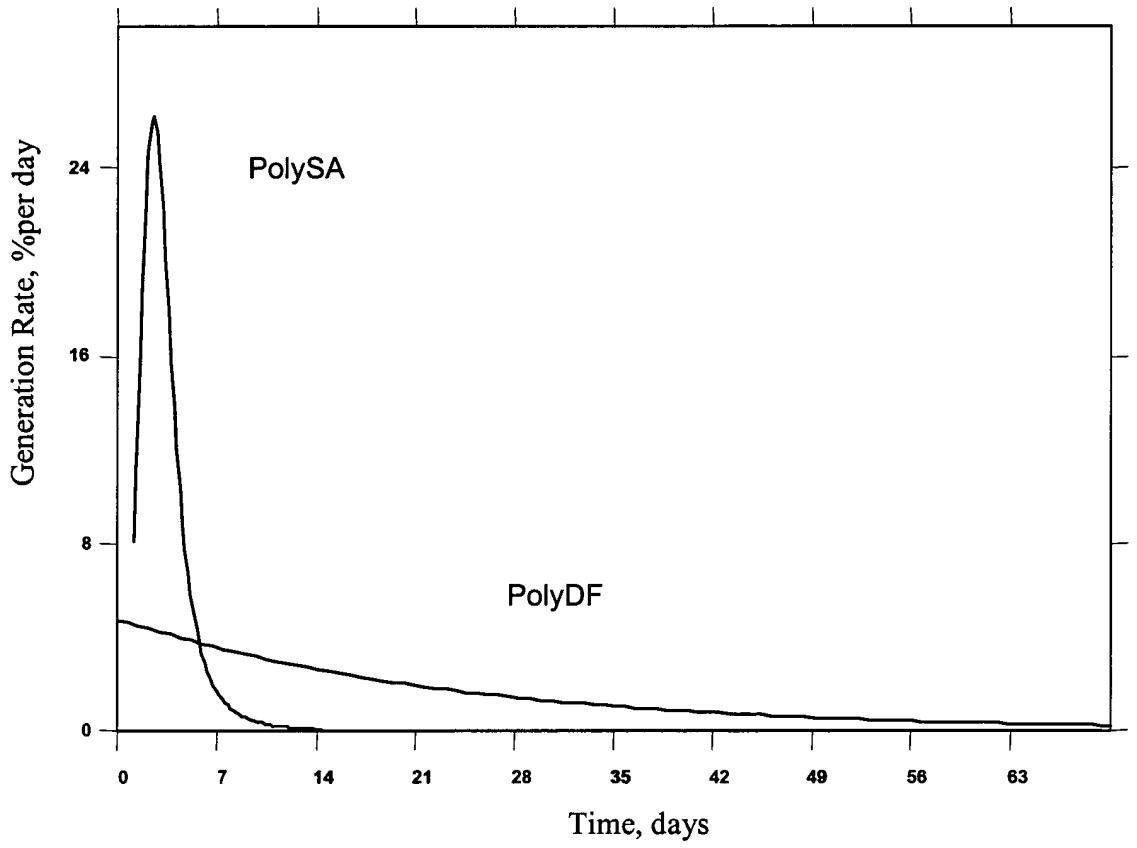

Generation Rate, %per day
24
16
8
0
PolySA
PolyDF
0
7
14
21
28
35
42
49
56
63
Time, days

Figure 57

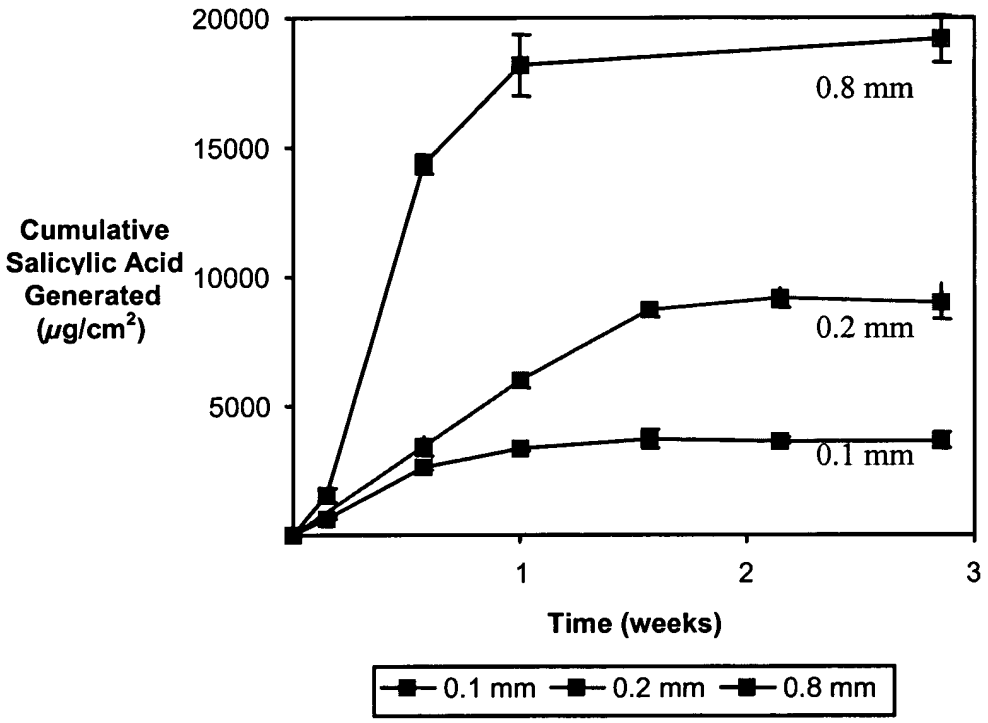

20000
15000
10000
5000
Cumulative Salicylic Acid Generated (μg/cm²)
0.8 mm
0.2 mm
0.1 mm
1
2
3
Time (weeks)
0.1 mm
0.2 mm
0.8 mm

Figure 58

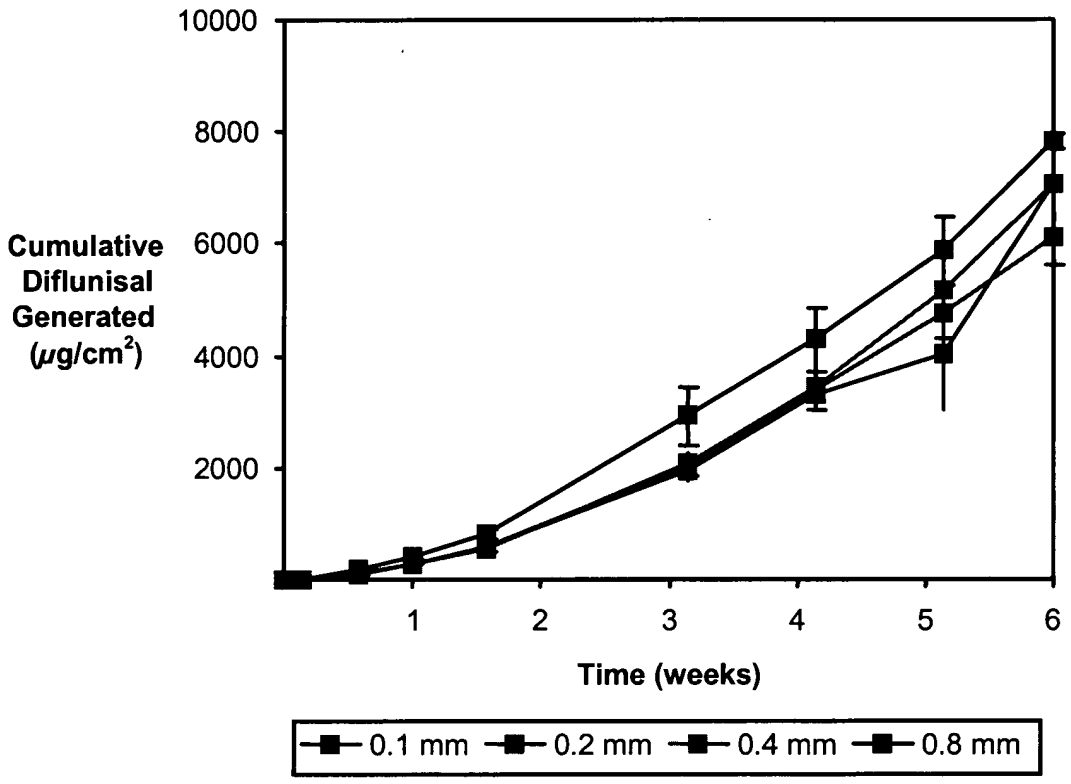

10000
8000
6000
4000
2000
Cumulative Diflunisal Generated (μg/cm²)
1
2
3
4
5
6
Time (weeks)
0.1 mm
0.2 mm
0.4 mm
0.8 mm

Figure 59

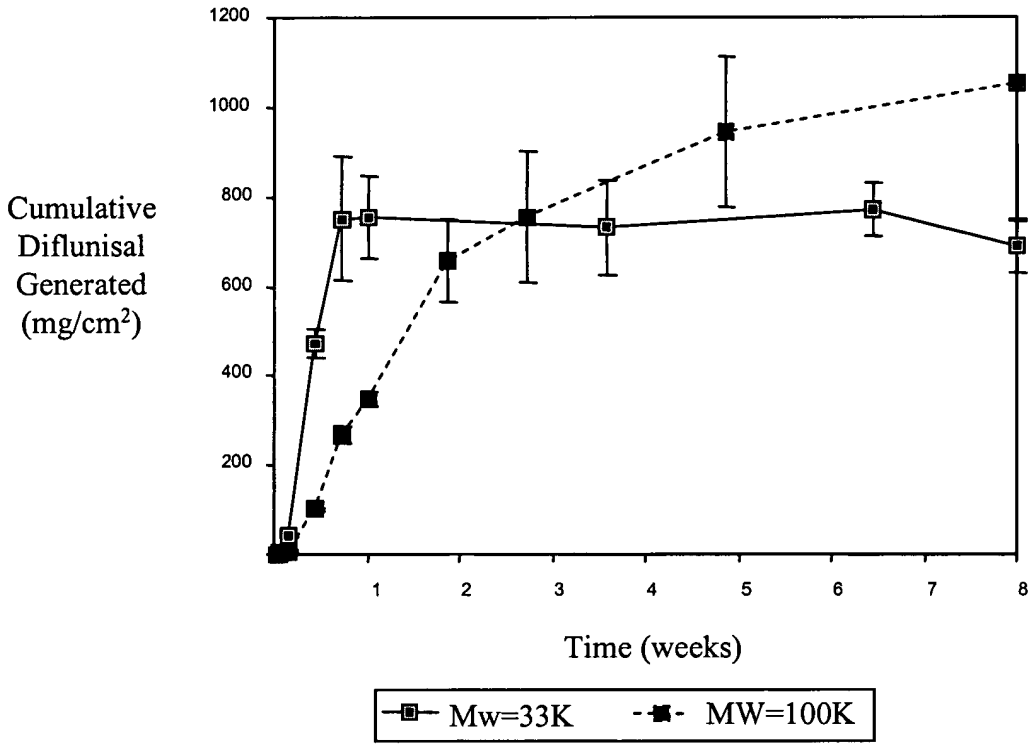

Cumulative Diflunisal Generated (mg/cm²)
1200
1000
800
600
400
200
1
2
3
4
5
6
7
8
Time (weeks)
Mw=33K
MW=100K

Figure 60

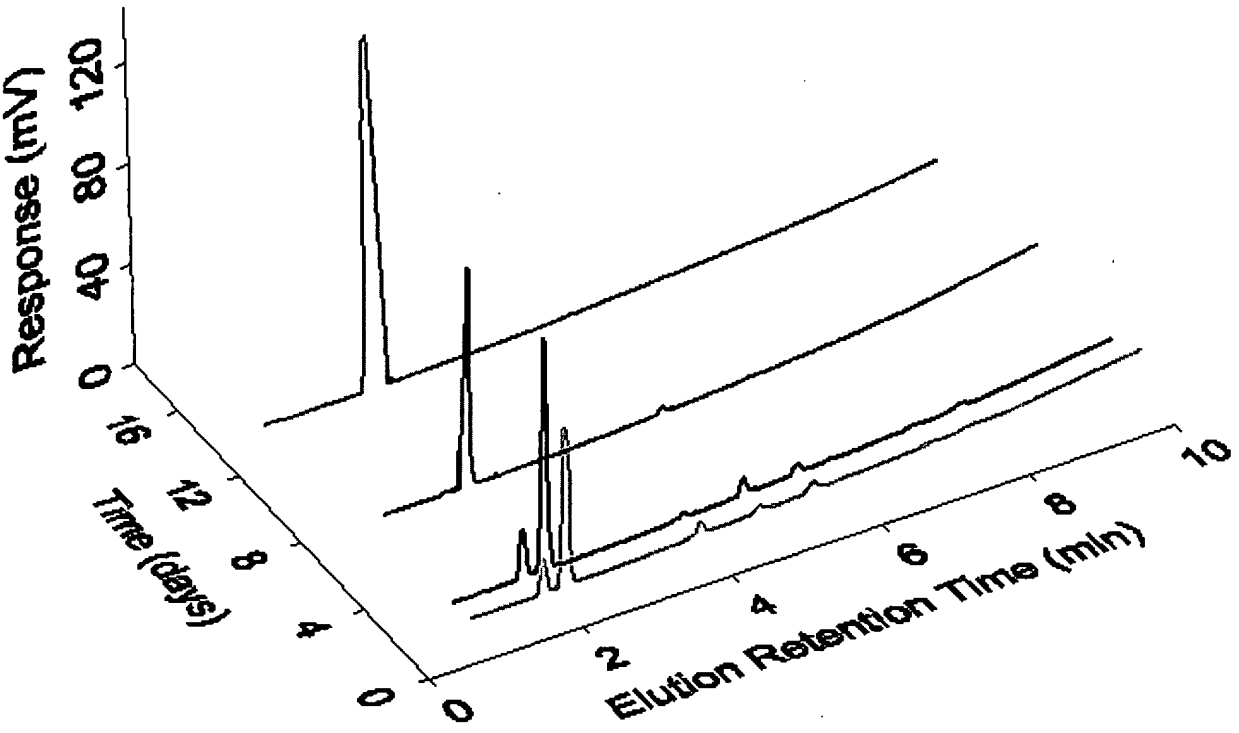

Response (mV)
0
40
80
120
Time (days)
0
4
8
12
16
Elution Retention Time (min)
0
2
4
6
8
10

Figure 61

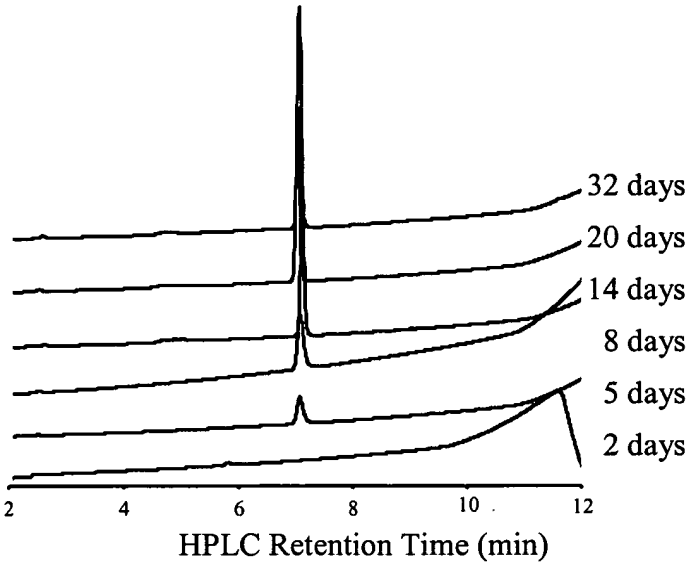

32 days
20 days
14 days
8 days
5 days
2 days
2
4
6
8
10
12
HPLC Retention Time (min)

Figure 62

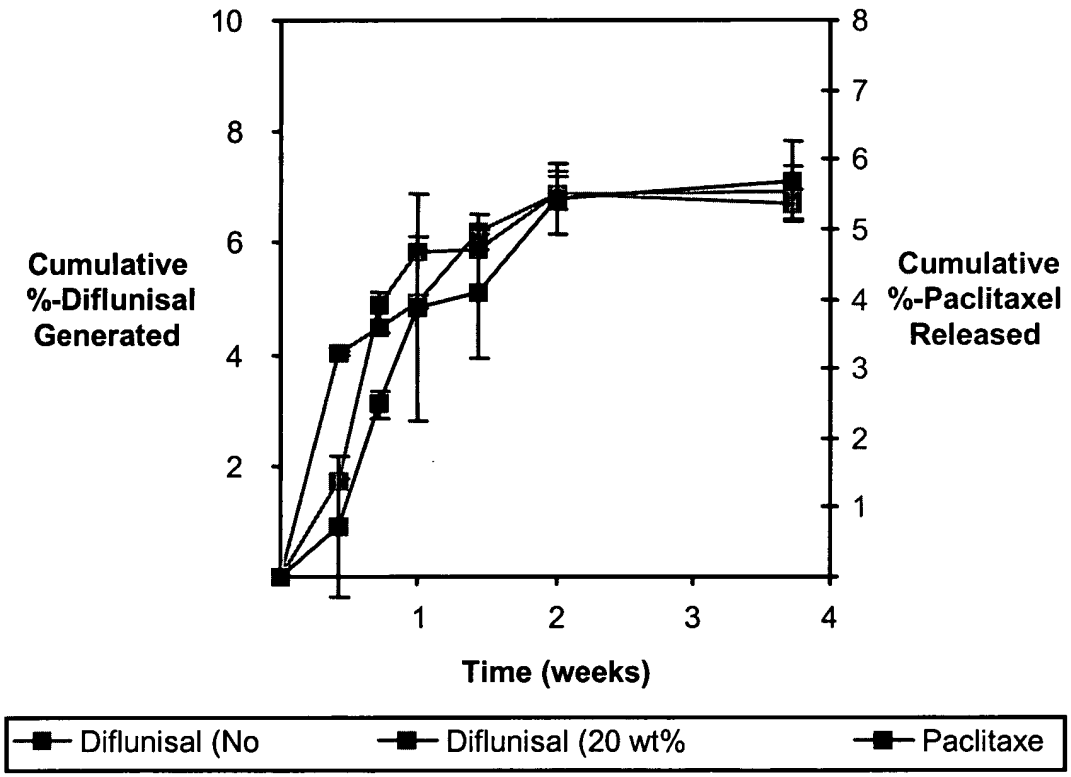

Cumulative %-Diflunisal Generated
Cumulative %-Paclitaxel Released
10
8
6
4
2
8
7
6
5
4
3
2
1
1
2
3
4
Time (weeks)
Diflunisal (No
Diflunisal (20 wt%
Paclitaxe

Figure 63

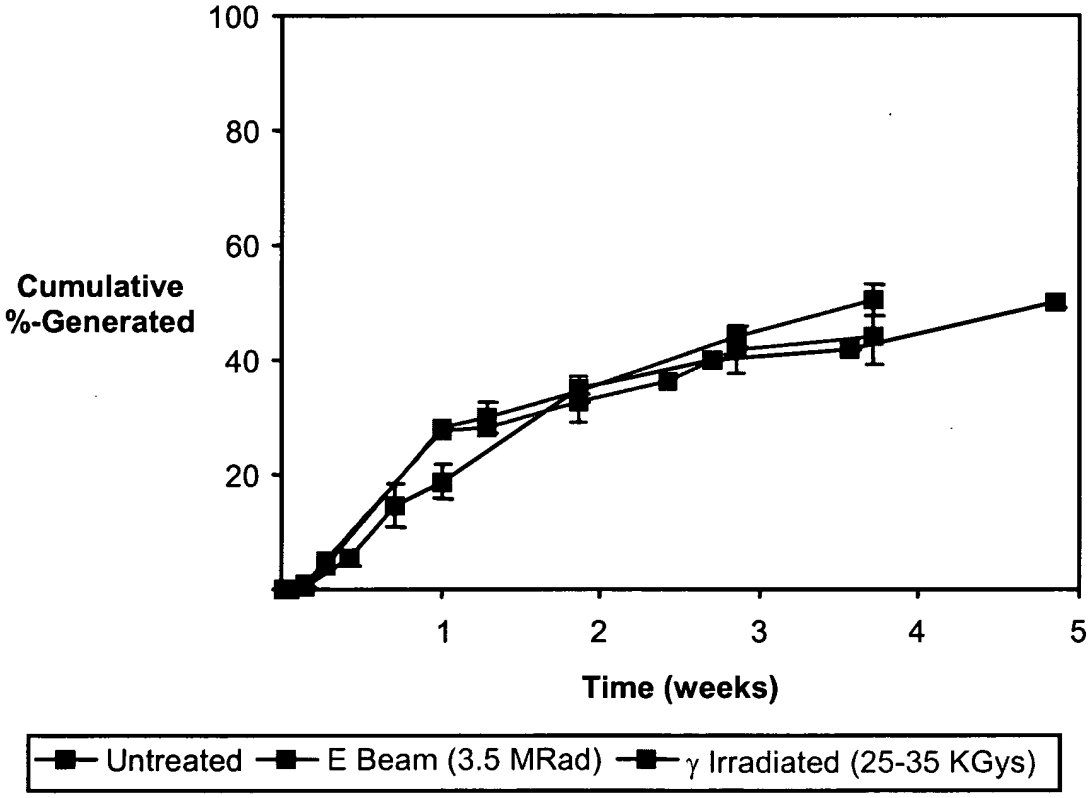

100
80
60
40
20
Cumulative
%-Generated
1
2
3
4
5
Time (weeks)
Untreated
E Beam (3.5 MRad)
γ Irradiated (25-35 KGys)

Figure 64

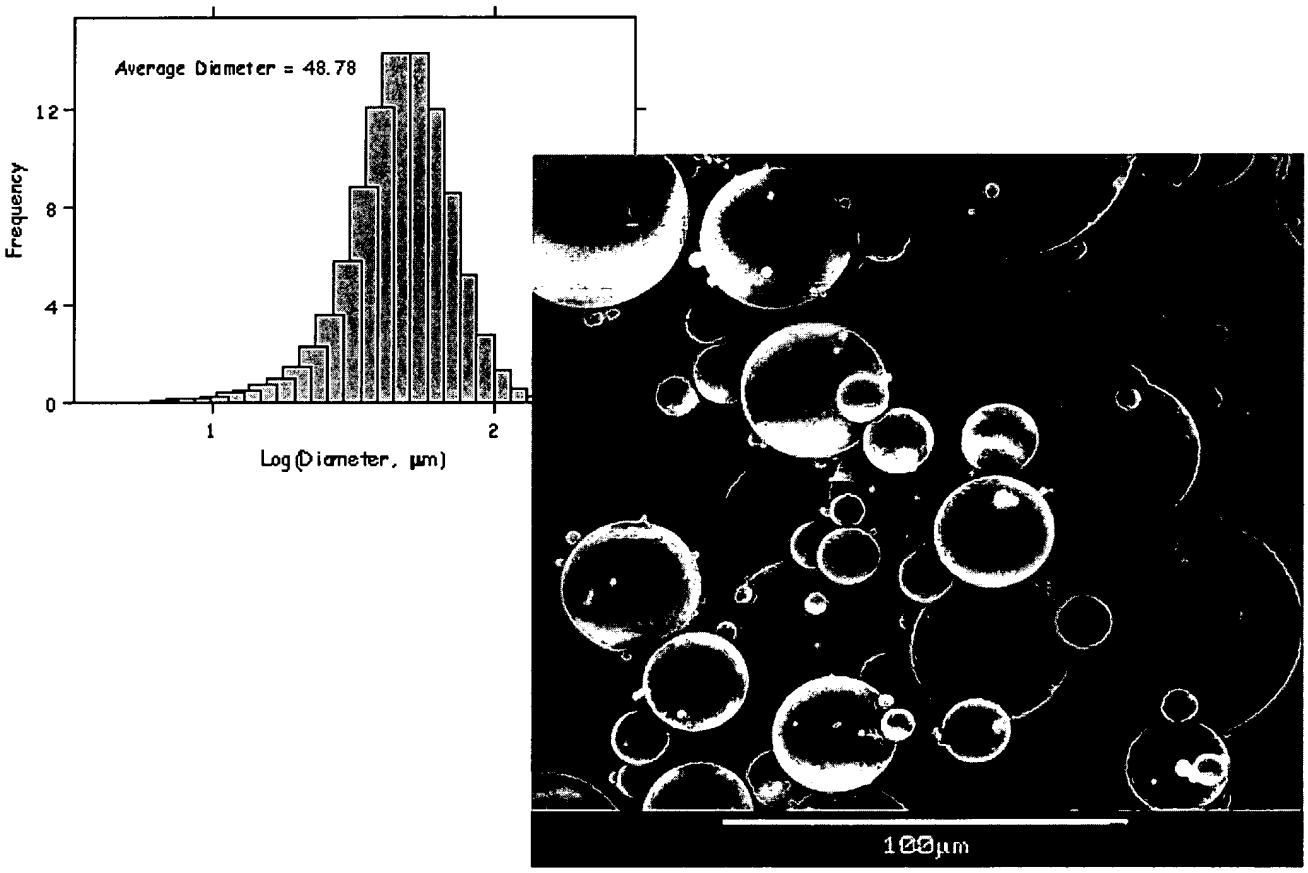

Average Diameter = 48.78
Frequency
12
8
4
0
1
2
Log (Diameter, µm)
100µm

Figure 65

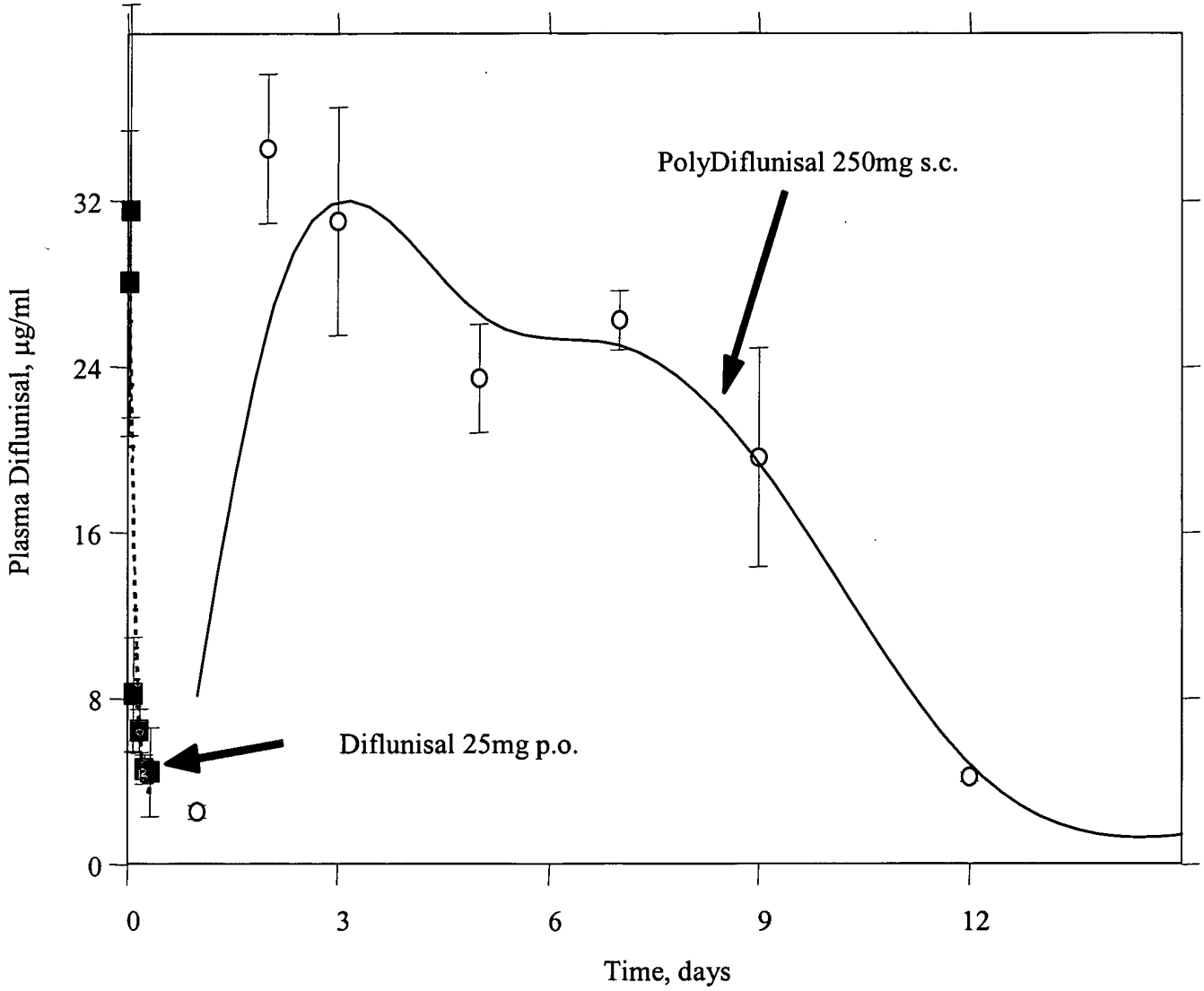

PolyDiflunisal 250mg s.c.
Diflunisal 25mg p.o.
Plasma Diflunisal, µg/ml
32
24
16
8
0
0
3
6
9
12
Time, days

Figure 66

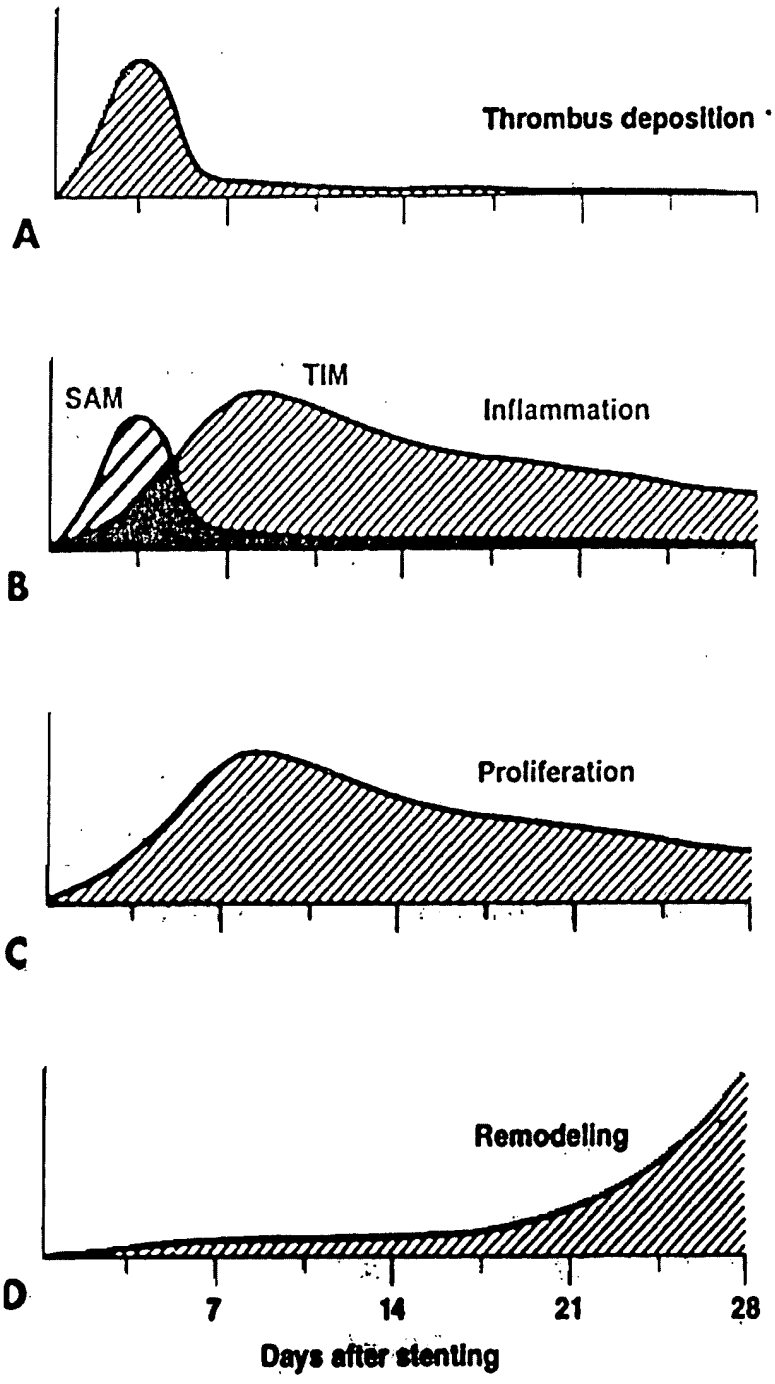

Thrombus deposition
A
SAM
TIM
Inflammation
B
Proliferation
C
Remodeling
D
7
14
21
28
Days after stenting

Figure 67

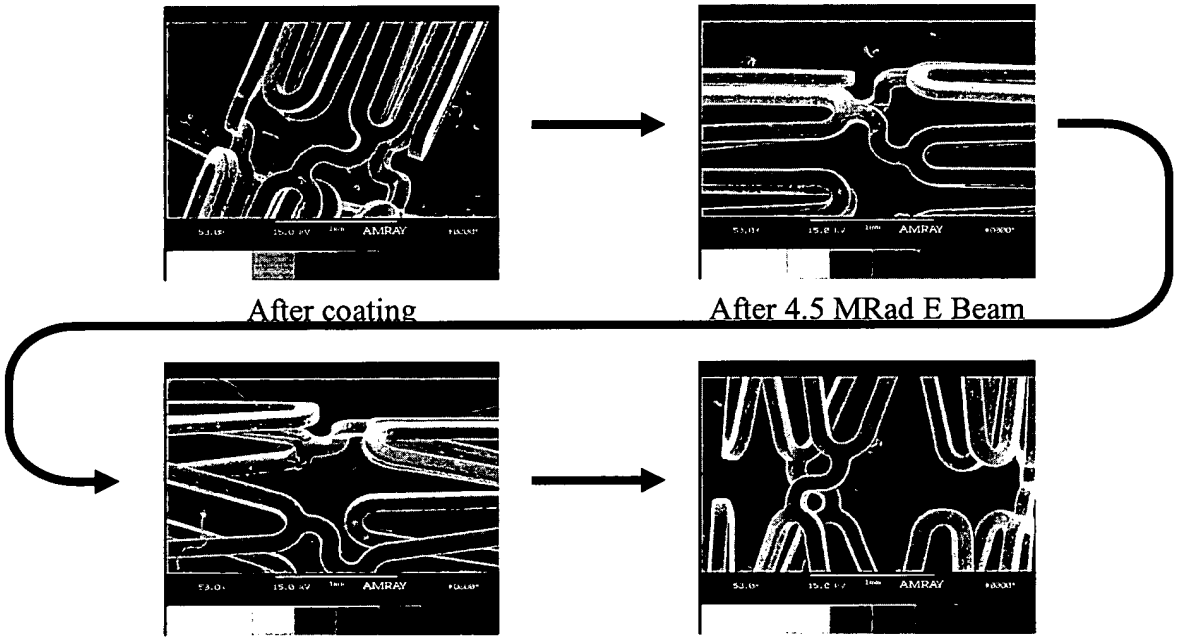

After coating
After 4.5 MRad E Beam
After expansion
After 2 hr in 37 °C serum

Figure 68

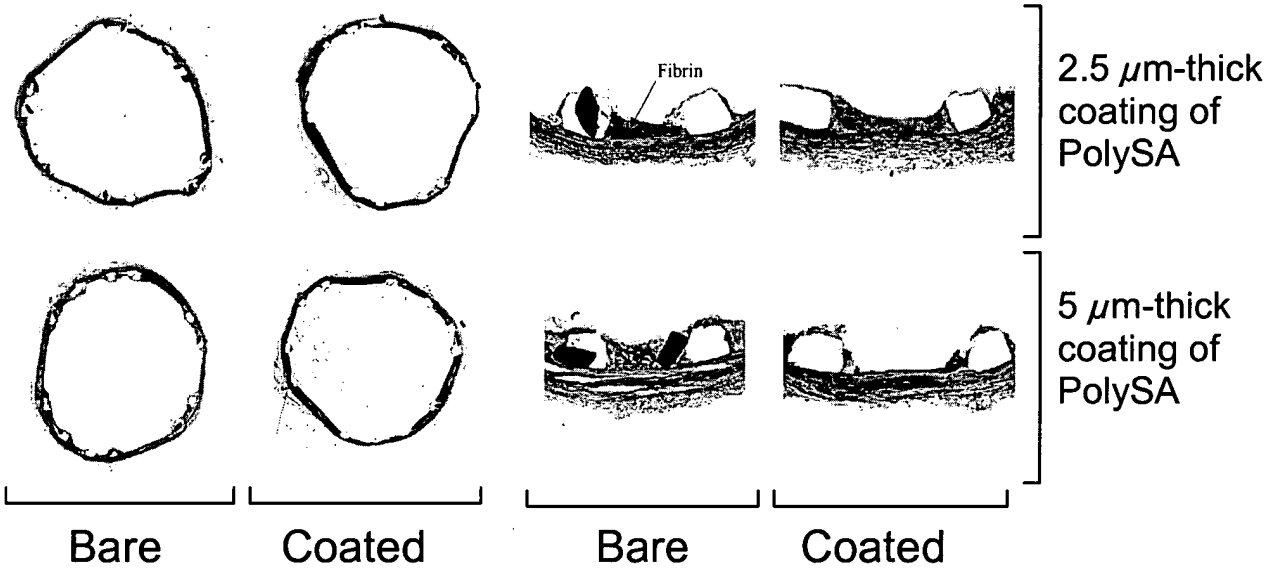

Fibrin
2.5 μm-thick coating of PolySA
5 μm-thick coating of PolySA
Bare
Coated
Bare
Coated

Figure 69

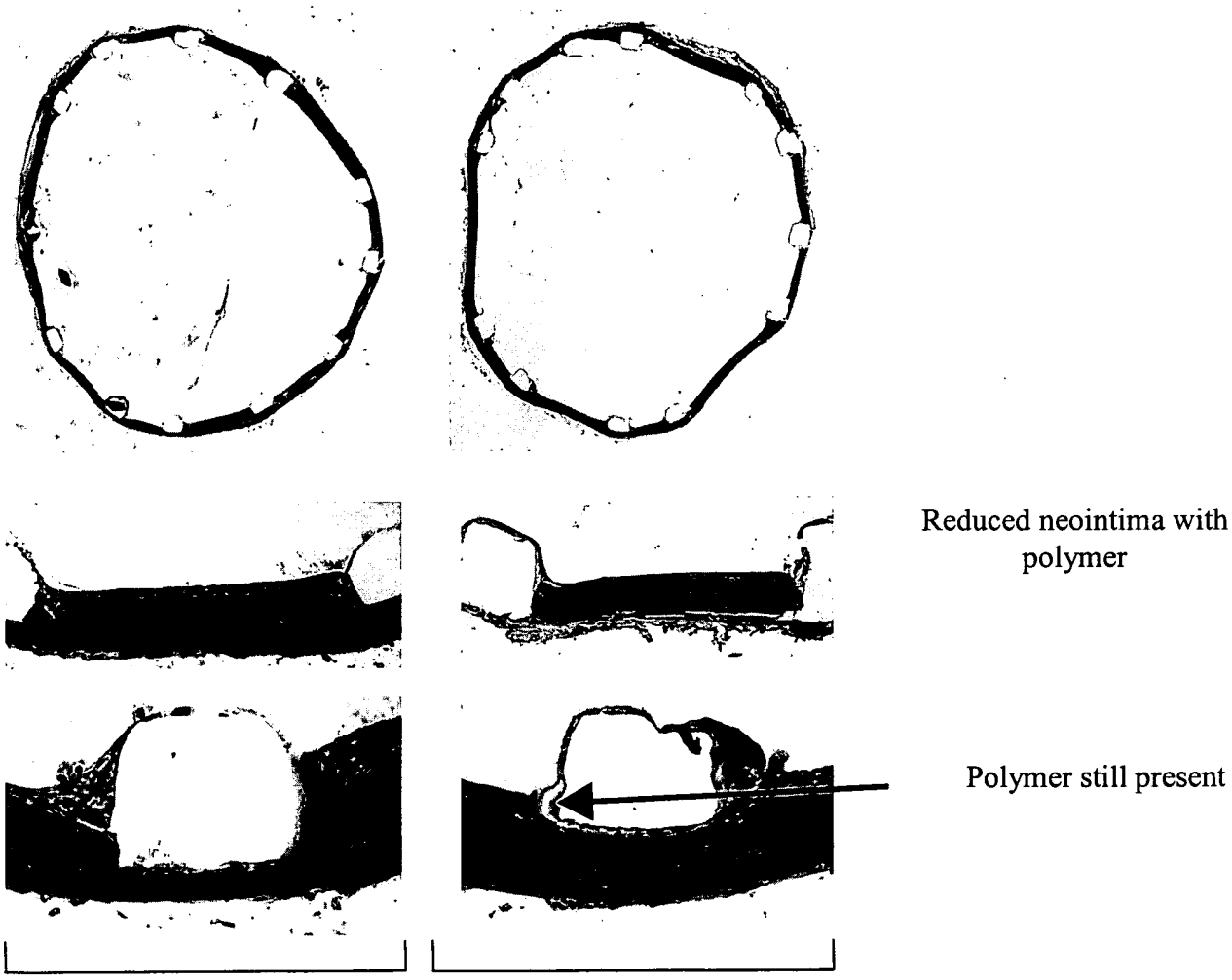

Reduced neointima with polymer
Polymer still present
Bare
Coated

Figure 70